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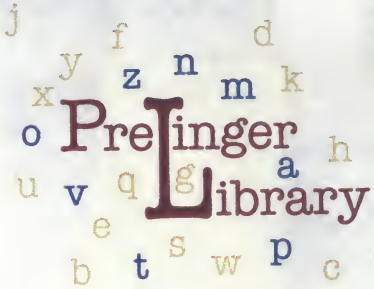

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Milwaukee, Wisconsin

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For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities

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THE WISCONSIN ARCHEOLOGIST

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THE BELL SITE, Wn9, AN EARLY HISTORIC FOX VILLAGE

Warren L. Wittry
Cranbrook Institute of Science

PART I. ARCHEOLOGY

Introduction

Those of us who were excavating at the Reigh Old Copper cemetery during the summer of 1953 were told by local residents about the discovery, made years before, of an Indian "chief" who had been buried astride his horse in a location immediately to the west. Our preoccupation with salvaging information from the Reigh site, which was being destroyed by gravel mining operations, probably allowed us to only nod our heads and say, "That is very interesting!"

Well, there had been such a discovery on the hill to the west, a result of early gravel mining, but the "chief" had been buried near the horse, not on it, and it was reported in the Oshkosh **Daily Northwestern** on July 20, 1911. The find is described in the present report under the section on burials.

This site again came to notice in 1958 when gravel mining operations were resumed and Neil Ostberg, of Milwaukee, began collecting activities as the stripping of the topsoil proceeded. When, in the spring of 1959, it appeared that the entire site would soon be destroyed, Ostberg brought the situation to the writer's attention. Ostberg's collection from the site was remarkable in that it contained both aboriginal artifacts and trade materials of the early historic period. The pottery was unlike any of the known Wisconsin types, and, in view of the presence of trade goods, it appeared as if this might be a village site of one of the Central Algonkian tribes which had fled to Wisconsin from their former habitat east of Lake Michigan during the period of the Iroquois wars.

On May 23 the site was tested with Professor Baerreis's

class in North American Archeology. The major excavation project, June 6 through July 1, was a joint enterprise of the State Historical Society, the Wisconsin Archeological Survey, and the Oshkosh Public Museum, under the direction of the writer. Assistance in the excavations came from many sources, prime among which was the Oshkosh Public Museum Explorer Scout Post.* Considerable aid came from Stuart Mong and Richard Horton, then Director and Curator of Geology, respectively, of the Museum. Weekend volunteers included Robert Salzer, Dewey Buck, Joan Freeman, and Phil H. Wiegand. All participated without compensation and it is largely due to their interest and cooperation that this and the accompanying reports can be set forth. In less than a week after our work was ended, the remaining portions of the site were almost completely destroyed by stepped-up quarrying operations.

I am particularly indebted to Neil Ostberg; first for his original information on the site, and secondly for his generously loaning his entire collection from the site for study and inclusion in this report. He also provided notes on burials and a dwelling. Feature numbers bearing the prefix "O-" were excavated by him. A few other specimens from this site were loaned by Martin Greenwald, of Milwaukee, and Robert Hruska, of the Oshkosh Public Museum.

At the time of excavations, the land was owned by Mrs. Blanche Bell and was under lease to the Strey Construction Company. Mr. Stuart Strey permitted the excavations and provided for the rental of an end-loader.

We used the end-loader to strip off the soil of the plow zone. When the trench of the palisade was discovered, we were able to trace it for 340 feet in less than 3 hours with this machine, a task which would have taken days with hand tools. In addition to the palisade, the excavated features included storage/refuse pits, postmolds, and a burial. The fill of the features excavated was sifted with a ¼-inch mesh screen.

This report has been illustrated with the assistance of

* Bud Gumz, Jerry Gumz, John Gumz, Jim Burton, Bob Dahl, Pete Mosling, Deiter Wilkensen, Kim Horton, and Dick Horton, Jr.

Patricia Kraft, Nora Vetowich, and Joan Wittry. The manuscript was typed by Margaret Fletcher.

Location

The site is located on the edge of the high bank on the south side of Big Lake Butte des Morts in Winnebago County. About 300 yards of lower land separate the site from the lake shore.

Our work was concentrated in the SE ¼, SW ¼, NW ¼, Sec. 7, T18N, R16E. Another site area was located directly to the west, across a small ravine, in the SW ¼, SW¼, NW ¼ of the same section. Although this western area was mostly destroyed prior to our work, the materials secured from it by Ostberg are the same as those from the area to the east. In 1959 a spring was still flowing in the ravine and it seems likely that it was the principle source of water for the former village surrounding it. Since this was a fortified village, the spring probably had much to do with determining its location. Early in the present century a small limestone quarry was opened directly south of the excavated area.

The Palisade (Figs. 1 and 2)

Fea. 80, the palisade, was marked by a simple trench which varied in width from 0.6 to 1.0 foot, averaging 0.775 foot. The trench was U-shaped in cross-section and filled with brown sand. No postmolds or artifacts were found in it. Its depth below surface ranged with 1.2 to 2.0 feet, averaging 1.6 feet.

As shown on the map, the line stopped abruptly at the north end where it had been cut off by previous gravel mining activities. Near this end there was a gap of about eight feet, with a single postmold nearby, which may have been an entrance. There was a more elaborate entrance at the south end where this line ended and another line of general northeast-southwest orientation was located. The openings in this area were 2.4 feet and 10.0 feet. This second line was truncated at its northeast end by a roadcut and at its southwest end by gravel quarrying in 1958. According to Ostberg, this line extended at least another 40.0 feet to the southwest.

Although storage/refuse pits were found on both sides of the lines, the areas to the southwest (toward the spring) and

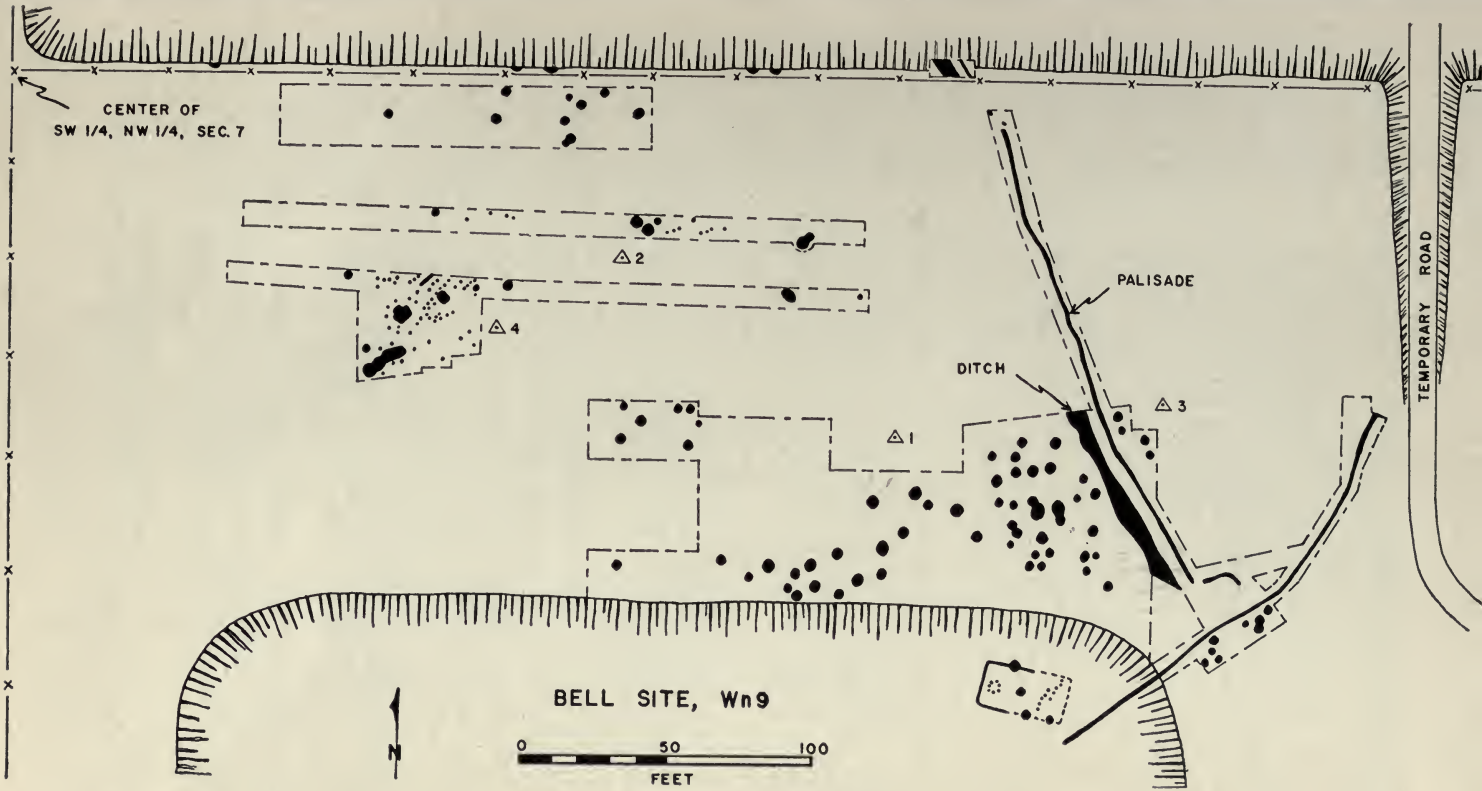

FIG. 1. Map of excavated area.

to the southeast of the palisade are presumed to be on the inside. Thus, on the inside of the line oriented northwest-southeast there was a U-shaped ditch, Fea. 75, 2.0 feet deep, spaced a uniform distance of 4.5 feet from the palisade trench. At its narrowest point the ditch was 2.0 feet wide. At points along the ditch its width varied up to 4.0 feet wide. Some refuse was found in the fill of the ditch.

Because of the relatively shallow depth of the palisade trench, earth from the ditch must have been heaped up be-

FIG. 2. The palisade trench, Fea. 80. Big Lake Butte des Morts appears in the background. Camera orientation: northwest.

hind the upright logs to add support. Years of recent cultivation, however, have obliterated all surface indications of the ditch and ridge. Nothing was found to indicate the height of the palisade.

Storage/Refuse Pits

Cache pits were the most common of the features encountered in the excavations. They showed up clearly in the sandy gravel under the plow zone. The outlines were round and oval; the cross-sections, bell- and basin-shaped. A few of the shallow pits were used as fire pits. The following tabulation does not include data on at least 45 pits excavated by Ostberg.

TABLE 1. STORAGE/REFUSE PIT DIMENSIONS

Shape	No.	%	Average Diameter	Average Depth
Round-bell	31	40.8	2.95 feet	2.37 feet
Round-basin	25	32.9	2.72 feet	1.69 feet
Oval-bell	8	10.5	3.47* feet	2.47 feet
Oval-basin	12	15.8	4.55* feet	1.56 feet

* Mean of longest dimension.

Bear Ceremonialism

In all cases, except one, the artifacts, animal bones, and other debris contained in the refuse pits were scattered haphazardly in the fill or were found more or less in layers suggesting that the pits occasionally may have been filled in stages. Feature 28, however, contained a bear skull which had been so placed as to indicate a special regard. The pit was 3.5 feet in diameter and it belled out to a diameter of 4.5 feet. Its depth was 3.5 feet below surface.

The skull was on the east side of the pit, underneath the slanting wall, and was facing toward the northeast. There was a large perforation in the left parietal. The mandible had been broken at the symphysis but the two halves had been placed in their normal relationship on the floor of the pit. The calvarium was on top of the mandible, but was inverted.

Dog Sacrifice (Fig. 3)

A shallow, round, basin-shaped pit, Fea. 33, contained the skeletons of three dogs. The pit was 4.3 feet in diameter and 1.3 feet in depth. As noted in Parmalee's report on the faunal remains, evidence for the eating of dogs was fairly

common at this site. These dog burials, however, are apparently the remains of dog sacrifice. The skeletons were articulated and the bones of the feet were present.

Dog 1 was the first placed in the pit. Its body was on its left side, oriented toward the west, but the head was twisted around toward the east. Dog 2 was on its right side with its head and face to the northeast. Dog 3, the last to be placed in the pit, was on its left side with the head facing southwest. The legs of all three dogs were partially flexed. The positions of the heads may indicate death by strangulation, or that the dogs had been hung by the neck after death.

Human Burials

Fea. 56 (Fig. 4), one of the bell-shaped cache pits, contained the skeleton of an adult female which is described in detail

FIG. 3. Fea. 33, burial of three dogs. Camera orientation. south

by Merbs elsewhere in this issue. This was the only burial encountered by the writer but, since other burials were found by Ostberg, it can be assumed that the use of a cache pit was atypical. It probably represents a hasty interment or the disposal of a person held with little regard. The pit was 4.0 feet in diameter and 3.6 feet deep. The body was placed on its back with the legs partially flexed toward the left side. The arms were flexed close to the body with the hands on the shoulders. The head was on the northwestern side of the pit facing down and toward the northeast. The body was slightly curved to conform to the bottom of the pit. There were no artifacts or refuse in the pit.

FIG. 4. Human burial, Fea. 56. Camera orientation: northwest.

In the light of Merbs' concluding paragraphs it is interesting to make the following quotation from LaPotherie (Blair, 1911, I:318): "Want rendered [the Fox Indians] so hideous that they aroused compassion. Although their bodies were large, they seemed deformed in shape; they had very disagreeable faces, brutish voices, and evil aspects."

Five human skeletons were included in the 1911 discovery. One, apparently a robust male, was buried "in a sitting position, his face toward the northwest." Directly in front of him was a pony and nearby was a female skeleton with copper bracelets on the arm bones. The newspaper article is vague but hints that the two human skeletons and the horse were in a common grave. There were three other skeletons, probably a female and two children, nearby. In the grave with the "chief" were the following articles: "One black pipe (broken) apparently made of some hard clay; four beaver jaws with the long, curved teeth of the animals, some of the teeth in good condition; a piece of iron from some old-fashioned trap; one sheath knife (not made of copper but of steel); two shorter pieces of knife blade apparently; a piece of wood with brass tacks and leather, something which was probably a highly ornamented chest; one badly rusted section of flint lock gun; four large and heavy sections of clam shells, all right sections; and one short piece of whetstone. There were also five bracelets of copper, brass, and iron; one of curved horn, only the core remaining, which is supposed to have been from a young buffalo; one large piece of bone, evidently from an animal larger than any known to have roamed the Wisconsin country, twelve inches long and two and one-half inches in diameter, from which pieces had been cut; three pieces of the same kind of bone, about ten inches in length and one inch wide by one-half inch thick, which were probably being fashioned into some implement; and one fish spear" (Oshkosh **Daily Northwestern,** July 20, 1911). A drawing of the last named specimen was found among the Kannenberg papers in the Oshkosh Public Museum. It is of the type shown in Fig. 7, D, and about twice as large as that specimen.

An adult male burial was discovered in 1962 by children digging in a sand bank. No details on the position of the

body or on the grave are available. Grave goods included a catlinite pipe (Fig. 27, 0), a copper bracelet (Fig. 10, T), brass finger rings, and portions of a fisher skull (Hruska, personal communication). The fragmentary fisher skull is probably remains of a medicine bag.

The following are burials excavated by Neil Ostberg. The first four were found in the area west of the ravine.

0-406, Burial 1, was a young adult female. The skeleton was on its back with the legs partially flexed to the right side. The arms were flexed with the hands on the sternum. The burial was oriented with the head to the north. The teeth were in poor condition and there were absesses on the mandible. An arthritic condition is indicated by lipping of the vertebrae. Depth 2.0 feet.

0-413 was an adult burial, disturbed by power equipment. An antler tube was found with the bones. Depth 1.25 feet.

0-420 was a child burial, also disturbed by power equipment. A piece of trade brass was found in the grave.

0-478, an adult female, was on its back with legs partially flexed to the right side and arms flexed with hands on the sternum. The head was oriented to the east. On the right clavicle there were 12 brass bangles and cordage, probably remains of garment decoration or ornamentation for a pouch.

0-444 was a flexed adolescent female with the head at the eastern end of the pit. Depth 3.0 feet.

Dwellings (Figs. 5 and 6)

Numerous scattered postmolds were uncovered in our work. In a few instances a number of them were in straight alignments suggesting house walls, but time did not permit the uncovering of a complete rectangular structure. Here and there were segments of wall trenches.

One circular pattern, 12.0 feet in diameter, had nine small postmolds on its perimeter. This was undoubtedly a wigwam site and the finding of charred cattail matting and birchbark provides clues as to the nature of the walls and roof.

In the area to the south which had been dug out prior to our work, Ostberg noted a rectangular wall trench house, 30.0 feet long and 16.0 feet in width. The plan of it shown in Fig. 6

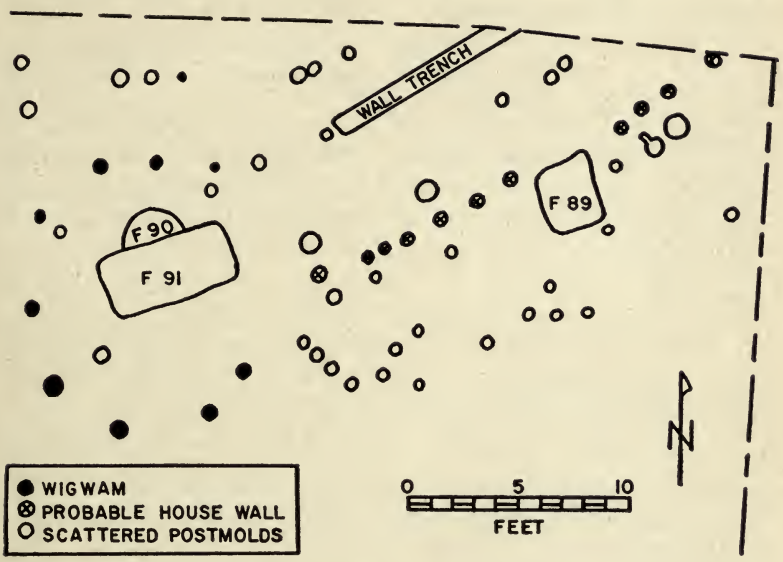

FIG. 5. Wigwam plan, miscellaneous house walls and scattered postmolds.

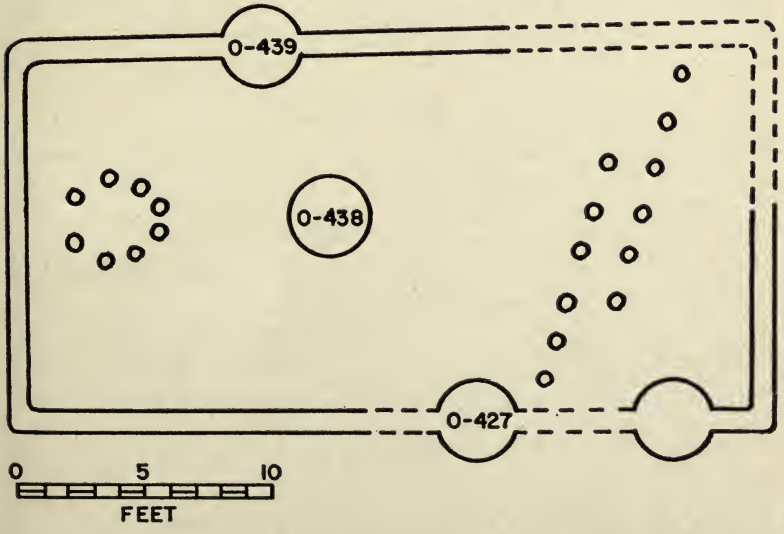

FIG. 6. Rectangular wall trench house (after sketch by Ostberg).

is redrawn from his sketch. The location and orientation of this house on the map (Fig. 1) are approximate.

Bone and Antler Artifacts

Arrowshaft Wrenches (Fig. 7, A-C)

Three specimens are represented. All are rib sections of a large mammal, probably elk. One is decorated on both sides with an incised design of filled triangles. The holes are 1.0 cm. in diameter.

Awl (Fig. 7, L)

Only one small somewhat polished specimen was recovered.

Bowls, Turtle Shell

Seven bowls were made from carapaces of the Blanding's turtle and four were of the painted turtle. Ten bowl fragments, unidentified as to species, came from six separate features. The bowls were well finished with all projections ground off.

Bracelets (Fig. 8, CC, DD)

The 3 examples, though of varying widths, were similar in having small centered holes at the ends and a groove which runs down the middle of the 2 illustrated specimens. On the third bracelet the groove is half way between the hole and one edge.

Cup and Pin Game (Fig. 8, W-AA)

A total of 7 cut deer phalanges were perforated and ground for use in the cup and pin game.

Die (Fig. 8, BB)

A bone disc with 9 small pits on one side from the game of dice, or bowl, was found.

Drifts (Fig. 8, N-R)

Five of these short sections of antler with oval or rectanguloid cross-sections were found. Although these artifacts have been referred to by other students as "counters," the clear signs of use on the ends indicate a utilitarian function.

Fans

A pair of carpometacarpal bones with knife marks on the

proximal ends and 2 digits of the Great Horned owl came from Fea. 65. Two carpometacarpals of the Canada goose with knife marks at both ends came from Feas. 30 and 32. The latter were from two individuals.

Fiber Shredders

Five beaver innominate bones bear worn surfaces at the lower end of the obturator foramen near the pubic symphasis. The wear penetrated through the compact bone and went as deep as 5 mm on 1 bone. The wear produced a high polish in the inferior ramus of the pubis at this point. The force applied was sufficient to break 4 of the bones.

Flaking Implements (Fig. 8, A)

A total of 7 deer antler tines bearing use marks at the tips was found.

Handles (Fig. 8, S-V)

Bone and antler handles for steel tools numbered 5. Three were for iron awls, 1 was from a butcher knife (S), and the tool for the handle shown in Fig. 8, U, is unknown.

Harpoons (Fig. 7, D-H)

Two complete, 3 fragmentary, and 1 unfinished specimen (H) were recovered. These large and heavy points were probably used for spearing fish.

Hoe (Fig. 7, N)

A dropped deer antler was made into a hoe by cutting off the upper portion, leaving two tines. The tips bear numerous scratches from use. Near the base is a small polished concave area where a part of the hafting was located.

Hook (Fig. 7, J)

For lack of a better term the long pointed bone with an oval cross-section is termed a hook. The head is cut to provide a hook on 2 sides of the implement. The size of these hooks would well engage the twisted basswood twine which was used for a variety of purposes.

Mat Needles (Fig. 7, O-R)

A total of 25 specimens made from deer ribs are represented by complete needles or sections. Some are highly polished.

The hole was located in the middle and was cut rather than drilled. In several cases the needle broke at this point, but was again made useful by cutting a new hole (Q, R).

Medicine Bags, Skulls From

In Parmalee's paper, skulls of the otter and fisher, cut so as to indicate that they are remains of medicine bags, are illustrated. Both came from storage/refuse pits. Another fisher skull was found with a burial.

Paint "Brush" (Fig. 7, I)

A trianguloid section of cancellous tissue, 5 mm thick, bears traces of red pigment, indicating use as a paint "brush."

Pin (Fig. 7, M)

Only the mid-section of a polished bone pin was found.

Plaques

Two flat sections of elk antler, 4.0 x 17.0 cm, and 7.0 x 15.0 cm, came from the same refuse pit. The former is 3 mm, the latter, 5 mm, in thickness. These are obviously unfinished articles, the final form of which is conjectural.

Projectile Points (Fig. 8, B-M)

Antler and bone projectile points occurred in a variety of forms. Most common (17) were conical, with or without a short pointed barb. Nine of these were in an unfinished state (C-E). One antler point was square in section (H). Fig. 8, L, is a beveled bone arrowpoint and M is a point made from a deer phalange.

Tubes, Small (Fig. 9, A-J)

These are interpreted as decorative rather than ceremonial in function. The short sections (A-C) are probably beads. The longer ones resemble hair pipes, but are of thin bird bones. A total of 13 were recovered.

Tubes, Large (Fig. 9, K-O)

Seven polished sections of the humerus of the trumpeter swan were found. Two undecorated specimens are not illustrated. Designs were applied on 5 tubes with small punctations or incised lines.

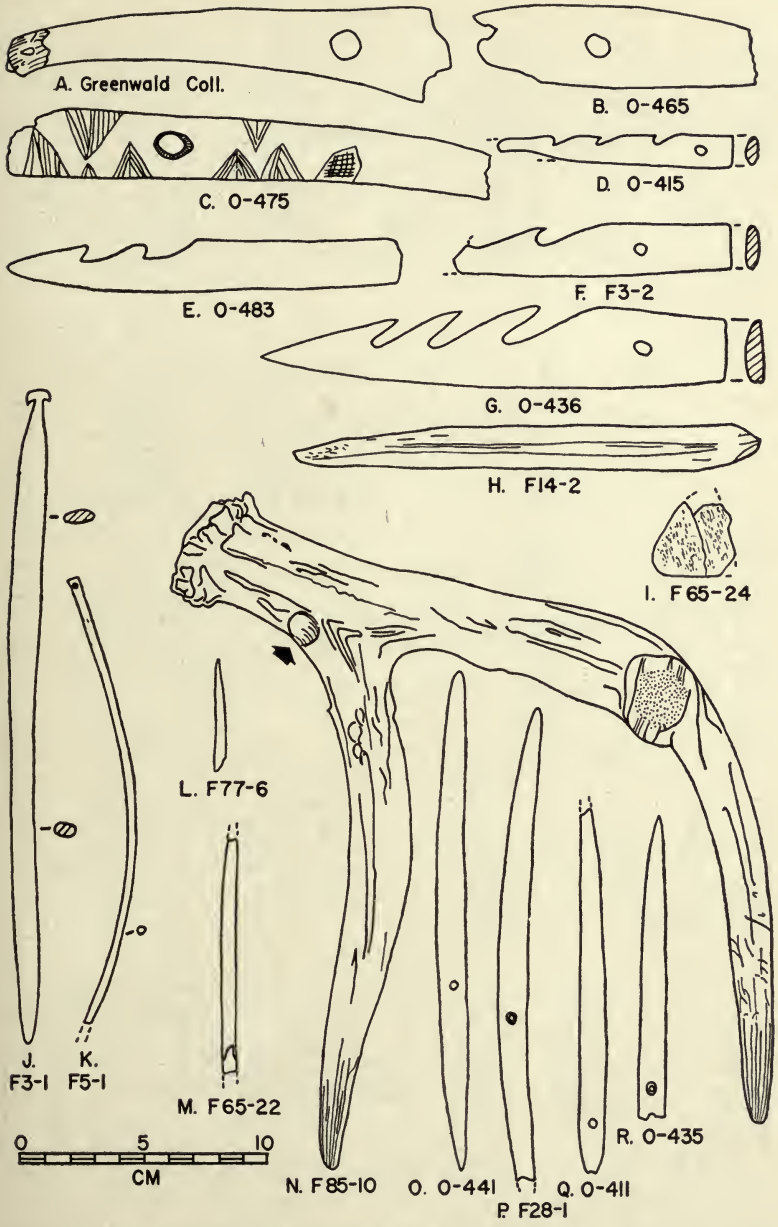

FIG. 7. Bone and antler artifacts. A-C, shaft wrenches; D-H, harpoons; I, paint brush; J, hook; K, needle; L, awl; M, pin; N, hoe; O-R, mat needles.

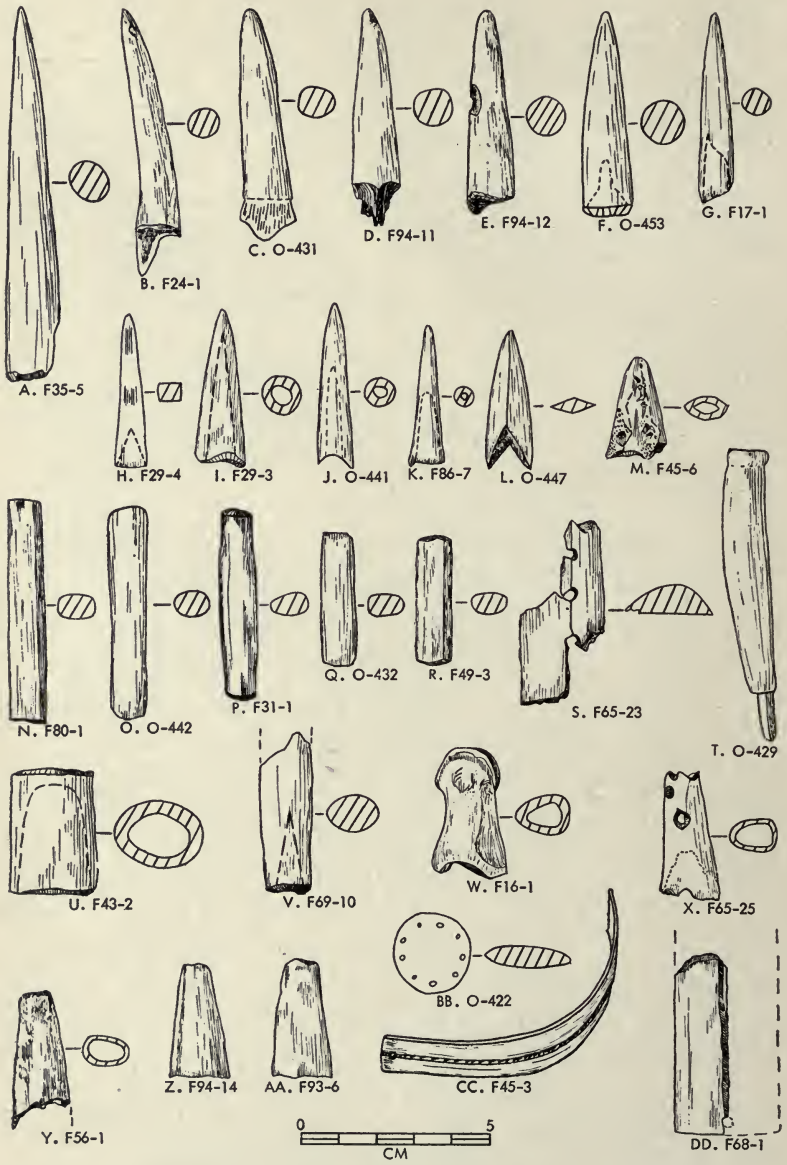

FIG. 8. Bone and antler artifacts. A, antler flaking tool; B-M, projectile points; N-R, drifts; S-V, handles; W-AA cup and pin game bones; BB, die; CC, DD, bracelets.

Brass Artifacts

Beads (Fig. 10, U-BB)

A total of 9 specimens of thin, rolled sheet brass in sizes ranging from 3 to 8 mm in diameter and 1.2 to 5.5 cm in length were found.

Bells (Fig. 11, C)

Three specimens were represented, all of the type shown in the figure.

Bracelet (Fig. 10, T)

The only metal bracelet found in our work was a simple curve of round brass wire.

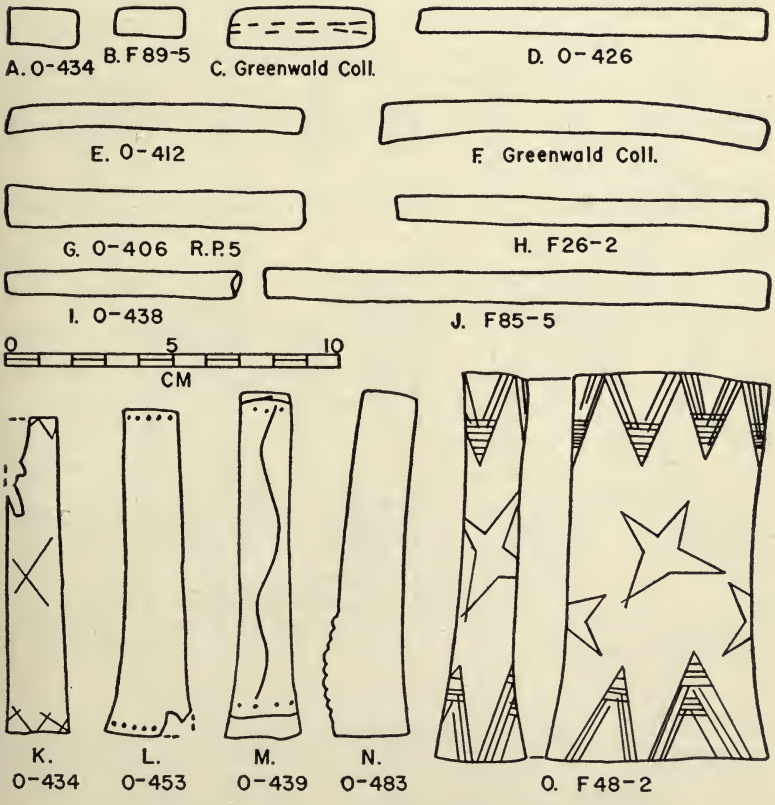

FIG. 9. Bone tubes.

Kettles (Fig. 12)

No kettles were fo
handmade lugs were
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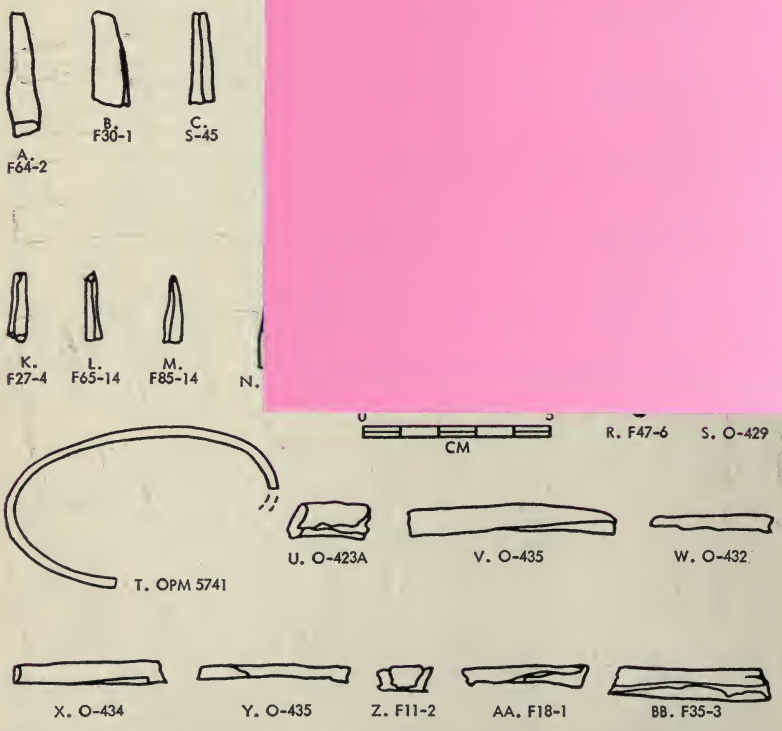

FIG. 10. Brass artifacts; A-M, tinklers; N-S, projectile points; T, bracelet; U-BB, beads.

Projectile Points (Fig. 10, N-S)

Some of the larger "tinkling cones" are perforated and are interpreted as arrowpoints with the perforation having been used to rivet the point to the shaft. In one case, R, the end of the wood shaft still remained in the point. Fig. 10, S, is a flat triangular projectile point with a central perforation. A line is engraved along one side.

Tinklers (Fig. 10, A-M)

Conical brass tinkling cones were made of rolled-up trapezoidal sections of thin brass. One of them contained remains of buckskin. Length ranges from 2.0 to 3.0 cm.

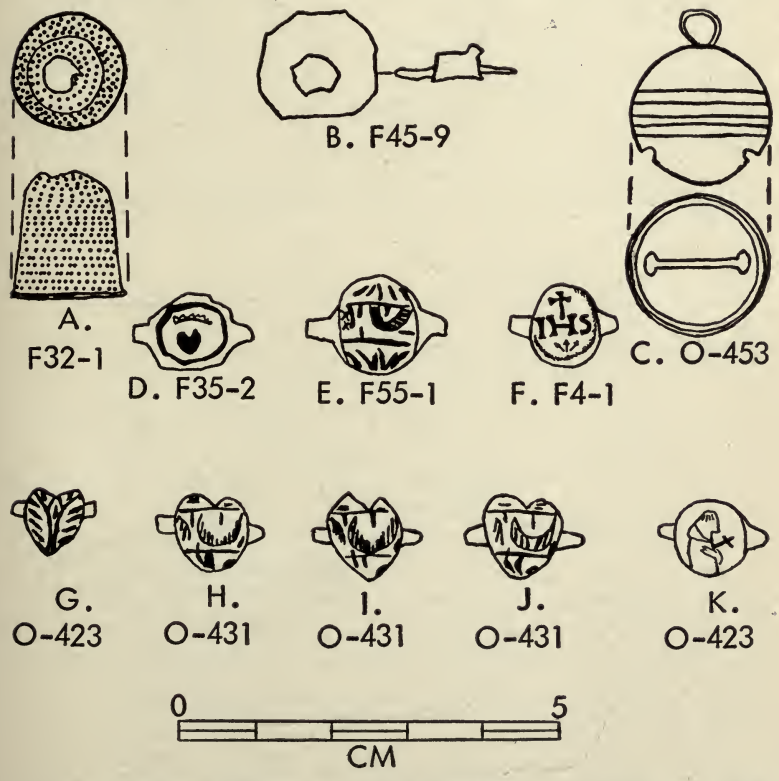

FIG. 11. Brass artifacts. A, thimble-tinkler; B, button; C, bell; D-K, Jesuit rings.

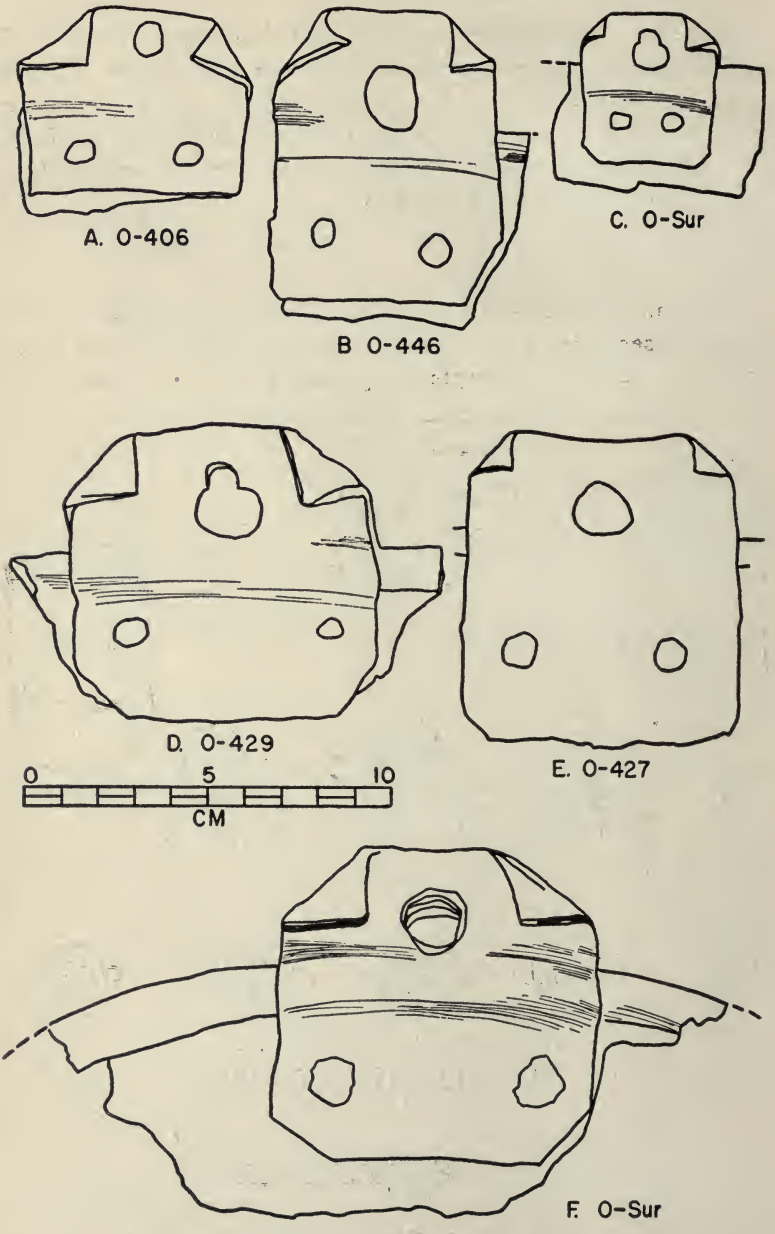

FIG. 12. Lugs from brass kettles.

Thimble (Fig. 11, A)

A small brass thimble had been converted to a tinkler by perforating the top.

Miscellaneous Brass

A few short sections of brass wire and other scraps totaled 151 pieces. Most of these were pieces of kettles which had been used up, i.e., beaten until they were so thin and brittle they fell to pieces. Some of the flat pieces had rivet holes and rivets near their edges indicating that they might have been used to strengthen or repair another thin flat object.

Ceramics

Two distinctive varieties of pottery were present at the Bell site. Type I, by far the predominant type, was represented by a restored vessel (Fig. 13, E) and 1079 sherds. Of Type II, there were 171 sherds. Twenty-three bodysherds were shell-tempered and smooth-surfaced. Thirty-nine sherds are unclassified.

I am indebted to James W. Porter for his comments and identification of tempering materials from his study of thin sections.

TYPE I POTTERY (Figs. 13, 14, 15)

Rimsherds with punctates	70
Rimsherds without punctates	15
Incised rim- and bodysherds	180
Plain bodysherds	814
	1079

PASTE: **Method of Manufacture:** Unknown; there are no obvious coil fractures.

TEMPERING: **Composition:** Probably crushed pea gravel and sand. Minerals present: Plagioclase feldspars (Na end), biotite, hornblende, microcline feldspar, zircon, quartz, and quartz showing undulatory extinction. Rocks present: chert, quartzite (?), graphic-granite, granodiorite containing biotite with wedge-shaped sphene crystals, and one well rounded, heavily altered, basic rock fragment (gabbro?).

Size: Ranges from 0.17 - 1.3 mm with 80% ranging from 0.4 - 1.0 mm.

Amount: Approximately 15% by volume.

Clay: There is a low proportion of silt- and sand-size grains (the presence of sand may be due to its being added as tempering). The clay particles are masked by carbon on the interior side of the sherds; the exterior side reveals crystalline clays. It does not seem likely that the firing temperature exceeded 650° C.

Texture: Numerous cracks running parallel to the surfaces, but otherwise compact.

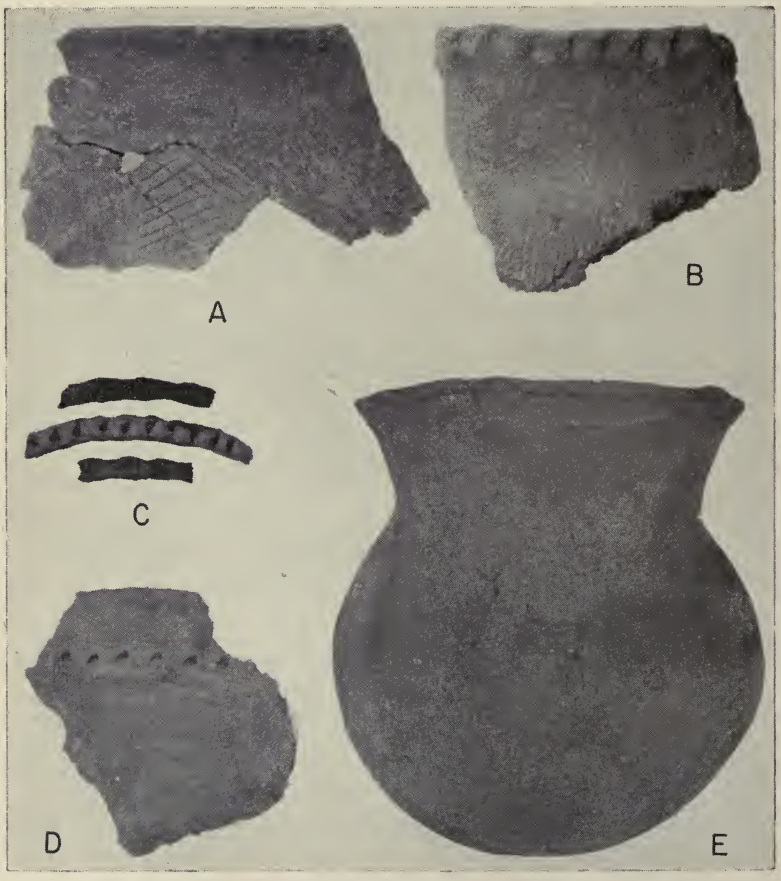

FIG. 13. Ceramics. A, C, D, E, Type I; B, Type II.

Hardness: 2.5.

Color: Tan to brown with fire clouds. Cores and interior surfaces sometimes reduced.

SURFACE FINISH: Invariably smoothed, but not sufficiently to reflect light. There is no trace of cord-marking having been utilized prior to the smoothing. In a few cases the smoothing is rather carelessly done with finger marks showing.

DECORATION: Limited to punctating and incising. The former is characteristically applied diagonally to the lip with a pointed instrument having a trianguloid cross-section (Fig. 13, C). Punctations are also applied in some cases on the interior rim; on the upper surfaces of annular ridges molded into the body of the pot (Fig. 13, D; 15, No. 43); or on handles (Fig. 14, No. 4). The lip, punctations usually cause a bulge in the rim just below the lip. The incised decoration is narrow-line and applied to the neck and shoulder areas in triangular areas of opposed diagonals (Fig. 14).

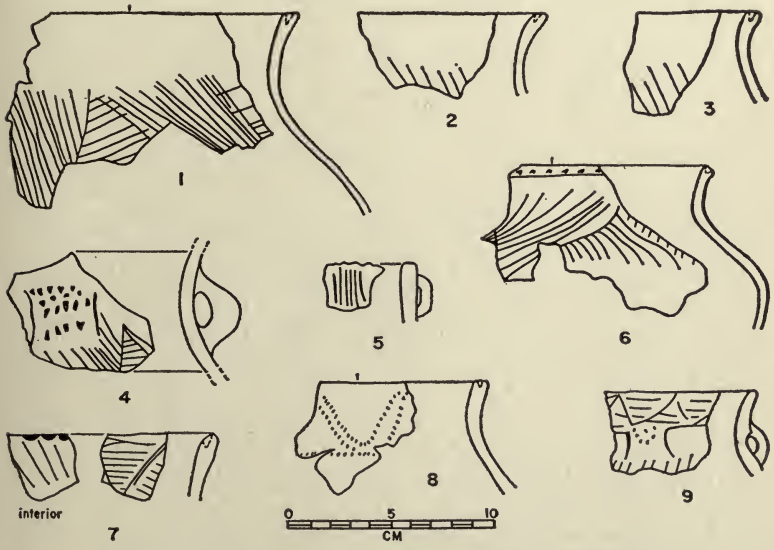

FIG. 14. Decorated rimsherds of Type I pottery.

FORM: **Rim:** Rims are high and slightly everted. One collared rim is present (Fig. 14, No. 9).

Lip: The form of the lip is usually squared with slightly rounded edges and has a tendency to be beveled toward the outside of the vessel. Some of the plain rimsherds have a sharper edge on the interior side.

Body: A near spherical body shape is indicated by the one

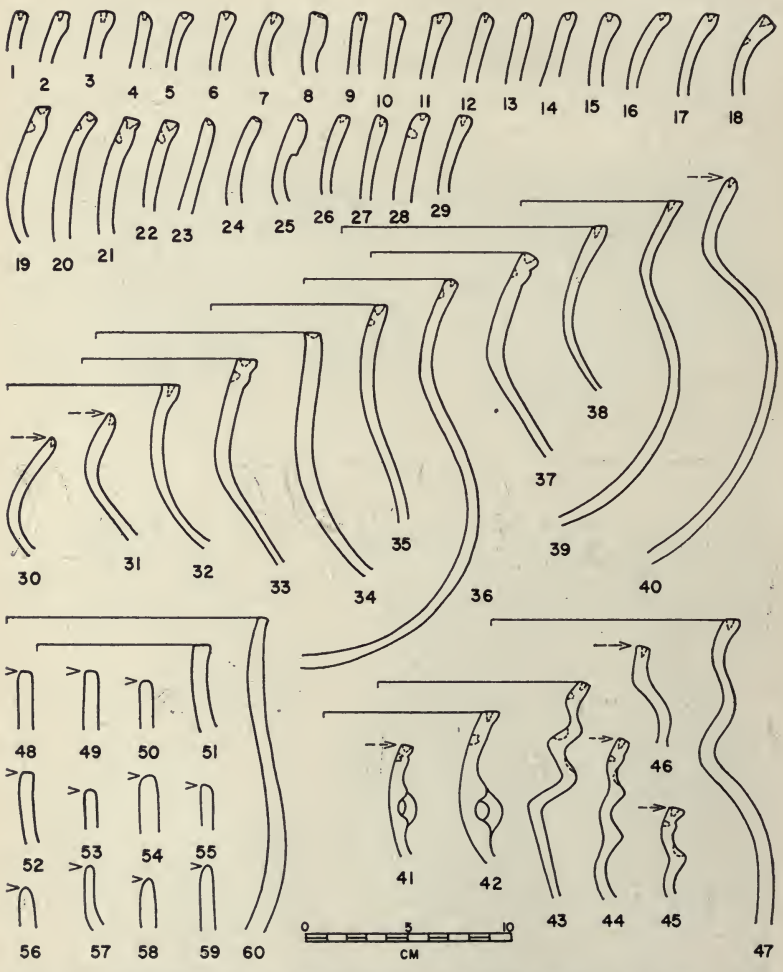

FIG. 15. Profiles of Type I rimsherds. Interior surfaces at left. (No. 36 is profile of the restored vessel shown in Fig. 13, E; No. 44 is of Fig. 13, D.)

restored vessel (Fig. 13, E) and profiles (Fig. 15). Fig. 15, Nos. 41-45, 47, show variations in vessel shape caused by adding one or two restrictions in the neck area, or by adding fillets to the neck.

Appendages: Occasionally strap handles are applied below the lip in the neck area (Fig. 14, Nos. 4, 5, 9) or attached to fillets (Fig. 15, Nos. 41, 42). The number of handles which were applied to a vessel is unknown.

Dimensions: Vessels vary from 12.8 to 26.0 cm in rim diameter, averaging 17.6 cm. The decorated vessels are somewhat smaller, averaging 14.9 cm; while the unpunctated vessels and those with neck bulges tend to be larger. The restored vessel has a rim diameter of 15.0 cm and a height of 19.1 cm. For the larger vessels height is estimated as varying up to 27.0 cm.

DISTRIBUTION: Bell site. Rimsherds of the unpunctated variety have been found on the Arrowsmith site in central Illinois and in the area of Saginaw Bay, Michigan.

AGE AND PROBABLE CULTURAL AFFILIATIONS: ? to 1680-1730 A. D. Probably Fox.

TYPE II POTTERY (Figs. 13, 16)

Rimsherds	20
Bodysherds	151
	171

PASTE: **Method of Manufacture:** Unknown; there are no obvious coil fractures.

TEMPERING: **Composition:** Mainly of crushed granodiorite. Minerals include feldspar (oligoclase), orthoclase, green hornblende, biotite, anhedral quartz, shene, zircon. One pyroxene fragment was noted.

Size: Ranges from 0.2 - 2.0 mm with 80% ranging from 0.6 - 1.5 mm.

Amount: Approximately 30% by volume.

Clay: Low in silt-size range. Very few sand-size particles. Carbon masking of clays is heavy throughout the core and interior side, but towards the outer surface the clays are crystalline. Firing temperature, therefore, was not likely to have exceeded 650° C.

Texture: There are numerous cracks in the paste running parallel to the surfaces; otherwise, compact.

Hardness: 2.5.

Color: Tan to brown with fire clouds. The cores and interior surfaces frequently are reduced.

SURFACE FINISH: Vessel bodies are cord-marked from the shoulder down. The cords were of medium diameter and fairly closely spaced on the paddle. The necks are well smoothed. Particles of tempering material frequently show on the surface.

DECORATION: The lips were crimped with fingers. There is no other form of decoration.

FORM: **Rim:** Medium high, slightly everted (Fig. 16).

Lip: Prior to crimping, the lip was probably rounded.

Body: Globular bodies are indicated by the profiles.

Appendages: None.

Dimensions: Rim diameters range from 19.6 to 25.4 cm, averaging 22.0 cm. Estimated vessel heights may have ranged up to 30.0 cm.

DISTRIBUTION: At present, known only from the Bell site.

AGE AND PROBABLE CULTURAL AFFILIATION: ? to 1680-1730. Possibly Sauk, Potawatomi, Kickapoo, or Mascoutin (in order of likelihood presumed by writer).

Other Pottery

Twenty-three shell-tempered, smooth-surfaced sherds probably represent contact with potters of the Lake Winnebago focus.

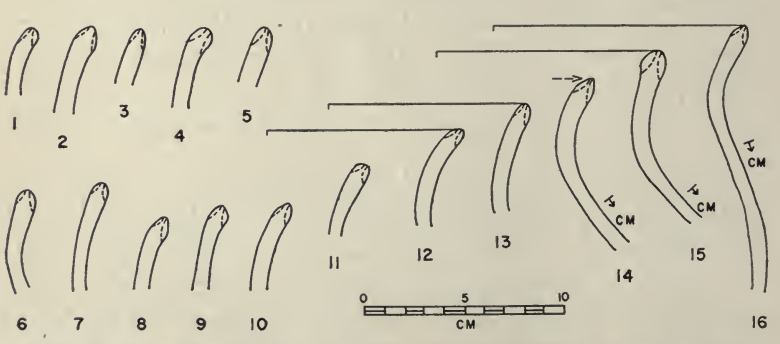

FIG. 16. Profiles of Type II rimsherds. Interior surfaces at left.

Four rimsherds of the 39 unclassified potsherds are shown in Fig. 17. A is grit-tempered and fabric-marked although the markings are somewhat indistinct. The lip is decorated with a series of diagonal gashes. B is shell-tempered with a smoothed neck and cord-marked body. There is a notched fillet near the lip. Another sherd of this type indicates that a strap handle was once present. In the Starved Rock area this pottery has been named **LaSalle Filleted.** C is grit-tempered, cord-marked and cord decorated. D is shell-tempered and decorated with medium-wide incising.

Chipped Stone Artifacts

Projectile Points

The predominant form of projectile point is a simple isos-

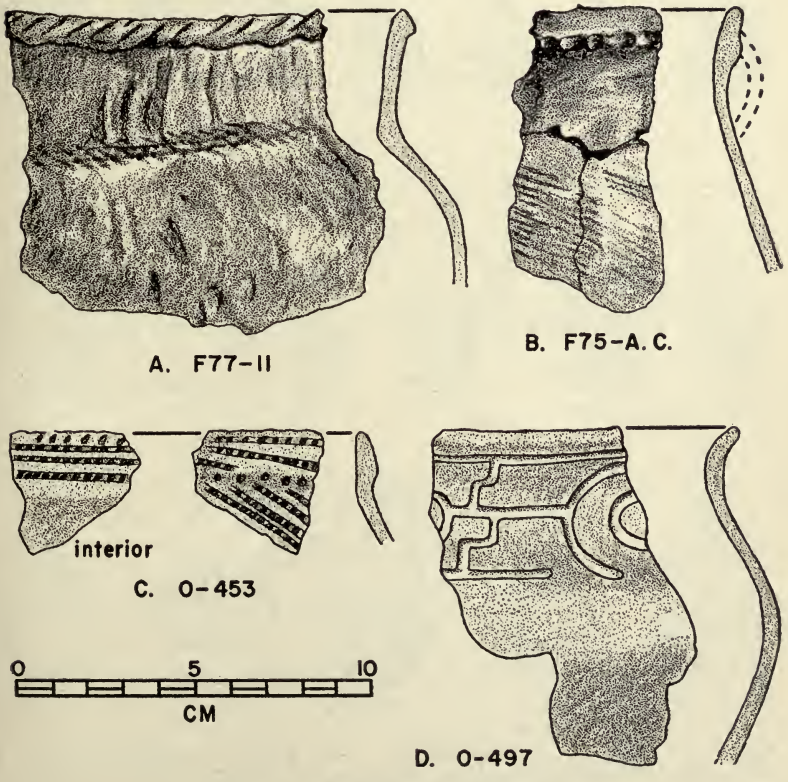

FIG. 17. Unclassified rimsherds.

celes triangle with straight sides and base. Most are rather crudely flaked, suggesting a decline in this art probably due to the availability of iron knives, muskets, brass and perhaps iron projectile points. None of the last named were found in the excavations.

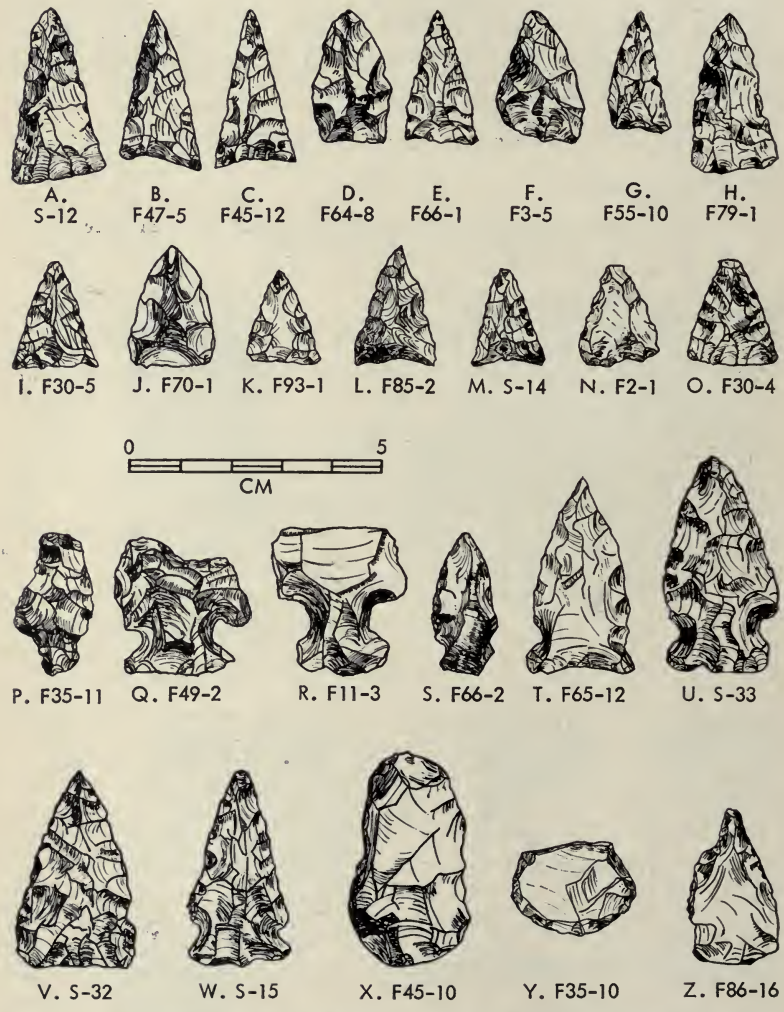

FIG. 18. Chipped stone artifacts. A-H, "long" projectile points; I-O, "wide" projectile points; P-W, unclassified projectile points; X, knife; Y, scraper; Z, drill.

The total series of 35 triangular points has an average length-width ratio of .62, but when the individual ratios are plotted on a histogram, the distribution is distinctly bimodal (Fig. 19). As in the case of having two distinct pottery types at this site, it is possible that we are also dealing with two distinct projectile point types; one which is relatively long and one which is relatively wide. The first line in Table 2 represents the total series; the second, those points with a length-width ratio of less than .65; the third line, those points with a length-width ratio of .70 or more. The table also shows that the mean widths of long and wide points are the same, indicating that the difference is a function of length. The coefficient of correlation between length and width is high when calculated separately for the two groups.

All of the triangular points except two are of chert native to central Wisconsin. These two and one of the unclassified points (Fig. 18, R) are made of Hixton silicified sandstone. Eight of the 9 unclassified projectile points are shown in Fig. 18, P-W.

Knife

One small crude chipped implement (Fig. 18, X) is the only aboriginal item which could have functioned as a knife.

Scraper

A notable lack in the inventory of stone artifacts is the

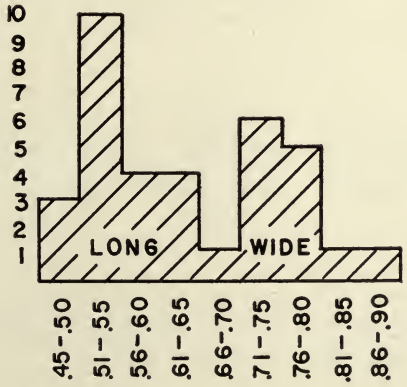

FIG. 19. Histogram of length-width ratios of triangular projectile points.

category of scrapers. There was only one specimen in the form of a finished scraper (Fig. 18, Y). One or two of the small nondescript flaked implements might have been utilized in scraping, but it is apparent that stone scrapers early disappeared from use.

Drill

Again, only a single specimen was found to represent a type of implement which is usually found in greater numbers on prehistoric sites. The drill is shown in Fig. 18, Z.

Gunflints

Gunflints are of both native and European materials and manufacture. The European flints are tan or honey-colored and of the French spall variety. The Indian-made flints are of local chert, chipped on both sides to a squared outline. The flints are much battered, some showing use with the fire-steel. Fig. 20, A-E, are French. Fig. 20, F-H, are of native manufacture.

Miscellaneous Chipped Stone

Nine chipped chert implements are too crude or fragmentary to permit identification or classification. A total of 288 chert flakes were recovered in the excavations. Thirteen artifacts or flakes were of Hixton silicified sandstone, the only known source of which is the Silver Mound in Jackson County, about 100 miles west of the site (Porter, 1961).

Glass Artifacts

Beads (Fig. 21)

Although we sifted all dirt through ¼-inch mesh screens and, hence would have been likely to have missed seed beads

TABLE 2. DIMENSIONS (MM) OF TRIANGULAR PROJECTILE POINTS.

		LENGTH				WIDTH					
	NO.	RANGE	MEAN	STD. DEV.	V	RANGE	MEAN	STD. DEV.	V	AV. L-W RATIO	r for L AND W
TOTAL SERIES	35	15-31	24.3	4.8	19.7	11-19	15.1	1.9	12.7	.62	.41
LONG POINTS	21	20-31	27.3	3.6	13.1	11-19	15.1	2.0	13.8	.55	.72
WIDE POINTS	14	15-24	19.8	2.8	14.2	12-17	15.0	1.8	11.8	.76	.92

that there were very many of them. We spotted none during our work.

Large glass beads were fairly numerous. The most common form is oval to round, of spun translucent glass. These beads are often made of poor quality glass and the layers are usually not fully fused. There were 43 beads of this type (A).

Next in number are opaque white, ovoid glass beads which also occur, rarely, in more rounded shapes. Total number of this class is 28 (B).

Dark blue stick beads, sometimes slightly curved, are represented by 9 specimens (C).

Two translucent amber-colored beads (D) are of the same disc shape as the blue "man-in-the-moon" variety, but lack designs.

Large translucent glass beads with 8 facets occur in amber (5) (E), blue (10) (F), green (1), and white (3) colors.

Of the 11 polychrome beads, 4 are of the stick variety (J) and the remaining are ovoid. Colors are limited to white, blue, green, and red (light and dark) (I).

There were 2 fluted translucent blue glass beads found (H).

Nine miscellaneous glass beads include ovoid and "doughnut" shapes in translucent blue and green glass (G).

Glass Fragments

Seven small fragments of thin glass were found. Five of these may have come from mirrors; two are evidently from small bottles.

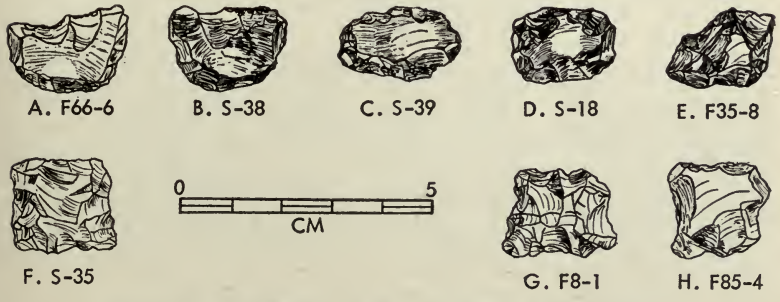

FIG. 20. Gunflints. A-E, French; F-H, Indian.

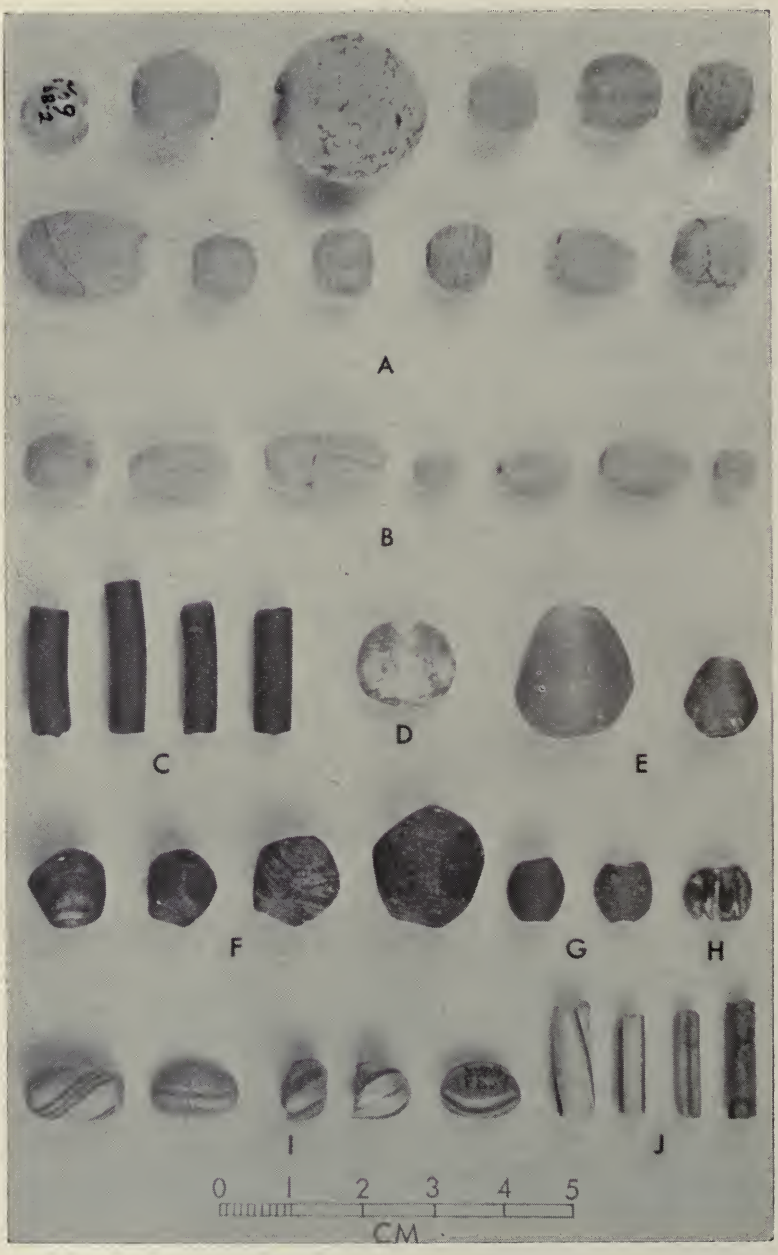

FIG. 21. Glass Beads.

Ground and Polished Stone Artifacts

Grinding Stones

It seems likely that these were used for the honing of iron axes and knives. Two are of fine grained sandstone, each having two grinding surfaces (Fig. 22, A, B); the third is of limestone (Fig. 22, C).

Two hammerstones were found (Fig. 22, D, E).

A crudely flaked adze of diorite was found on the surface (Fig. 22, G). Its cutting edge is small and ground on only one side.

A fragmentary sandstone arrowshaft smoother (Fig. 22, F) is of the Oneota type which were used in pairs.

Polished Stone

Aside from smoking pipes, described elsewhere, this category is limited to ornaments of Minnesota catlinite. There are 4 objects, all pendants (Fig. 23). Nine waste pieces of catlinite were found.

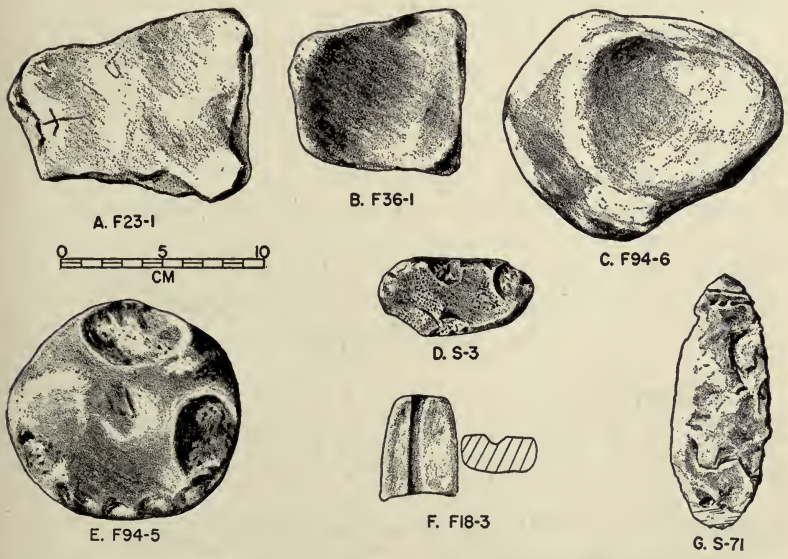

FIG. 22. Ground stone artifacts. A-C, grinding stones; D-E, hammerstones; F, arrowshaft abrader; G, adze.

Iron Artifacts

Awls (Fig. 24, M-Z)

The double-tapered, double-pointed iron awls were called "bodkins" in contemporary documents. Most are square in section and some have a groove or notches at the midpoint. Some were set in bone handles (Fig. 8, T) and some were used as fish gorges. Since only 1 bone awl was found at this site, these iron awls probably served the functions of the former as well. Maxwell and Binford (1961:88) attribute the awls with an offset at the midpoint to post 1760 levels at Fort Michilimackinac. The one from the Bell site (Fig. 24, Q) would date from an earlier period. Three fragmentary awls with round cross-sections may be remains of needles.

Axes (Fig. 24, A-D)

Three blade fragments and 1 complete axe head were found. None appear to bear a touchmark, though all are badly rusted. The blade shapes are medium wide, straight on the outside edge, and straight or slightly concave on the inside edge.

Firesteel (Fig. 24, G)

One fragment of a flat, oval firesteel was recovered. As noted above, some of the gunflints show signs of use with the firesteel.

Grenades

Three fragments of round, hollow, cast iron balls, 9.0 cm (3½ inches) in diameter and 1.0 cm thick were found in cache

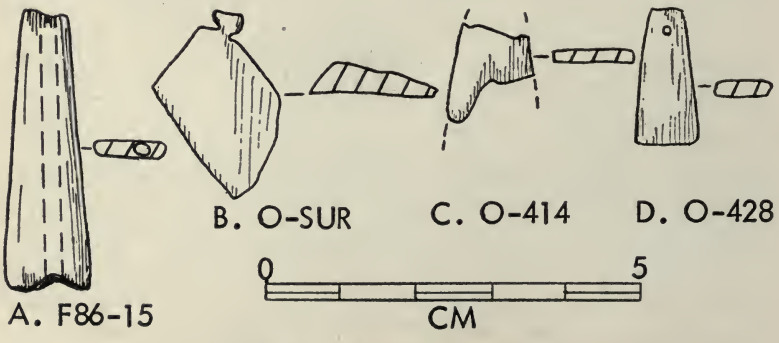

FIG. 23. Catlinite pendants.

pits. Grenades 3.0 inches in diameter were excavated at Fort Michilimackinac (Maxwell and Binford, 1961:99). Grenade fragments indicating a diameter of 4½ inches and ½ inch thick were recovered from the site of a Natchez fort which was attacked by the French in 1731 (Ford 1936:68).

Hoe (Fig. 24, E)

One heavy socket portion was found which, because of the suggested narrowness of the blade and heavy construction, may have been instead an adze.

Jew's-harp (Fig. 24, H)

One specimen 6.0 cm in length was found.

Key (Fig. 24, F)

An iron key for a chest or door lock was a surface find.

Knives (Fig. 25)

By the time this site was occupied, iron trade knives had almost entirely replaced stone knives and scrapers. Most common was the French clasp knive, represented by blades with a hinge hole and flange at the butt end. The blade shapes of these were of both the sharp-pointed sword shape (A-E) and the hawk-billed shape (H-L).

A different variety of clasp knife had, instead of butt flanges, a rounded extension of the butt to serve as a stop (F, G).

Butcher knives were represented by 4 specimens (M-P) having 2 or 3 rivet holes in the handle. A section of bone handle for a butcher knife is shown in Fig. 8, S. Makers' names, initials, and symbols are stamped on some knives as indicated in the illustrations.

Musket Parts

Musket parts found in different proveniences are a stock screw (Fig. 24, I), a perforated gun-sight (?) (Fig. 24, J), a lock plate (Fig. 24, K), and a trigger (Fig. 24, L). According to Harold R. Peterson (1956), the lock plate is typical of the period 1690-1740. Remains of a complete musket were found with a burial in 1911.

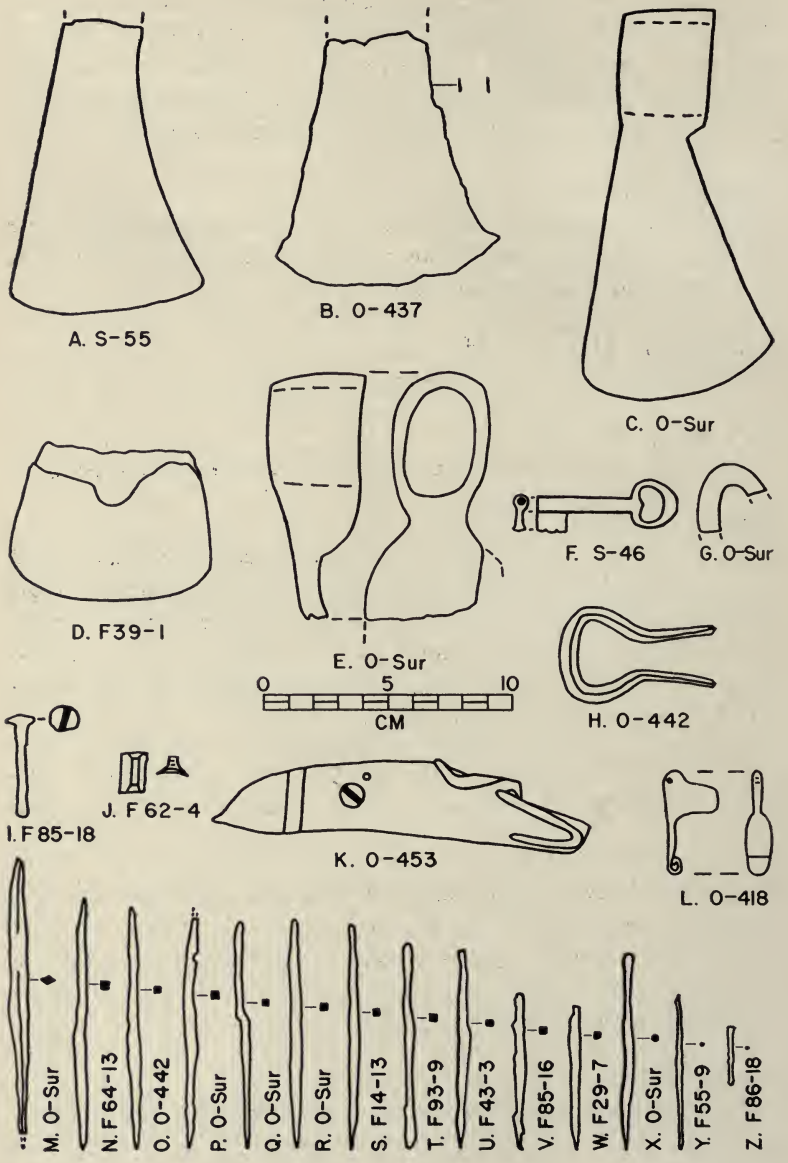

FIG. 24. Iron artifacts. A-D, axes; E, hoe or adze; F, key; G, firesteel; H, Jew's-harp; I, stock screw; J, gun-sight; K, lock plate; L, trigger; M-Z, awls.

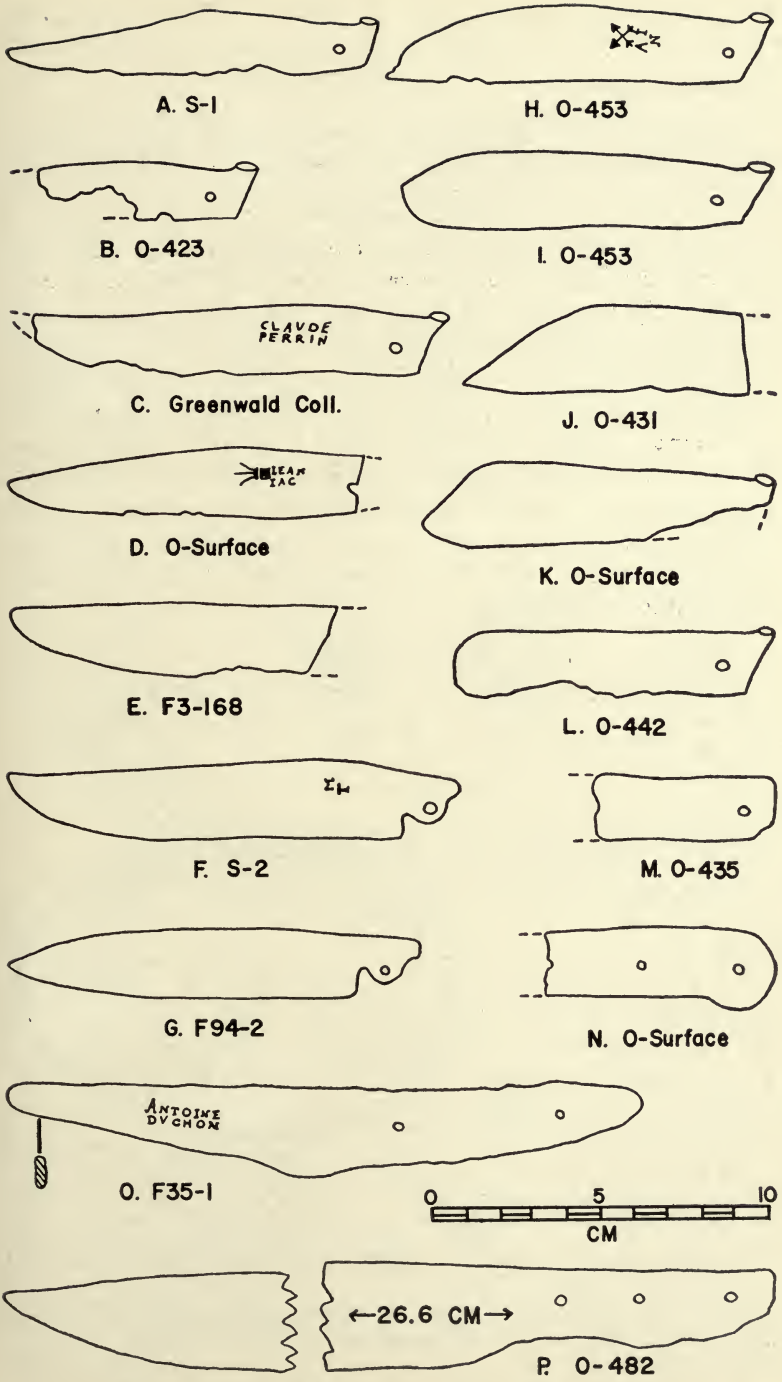

FIG. 25. Iron knives. A-L, clasp; M-P, butcher.

Miscellaneous Iron

In addition to the above, there were 14 scraps of iron, probably sections of knife blades, bail fragments, and wire.

Lead Artifacts

Several clinkers, galena cubes, and melted lead pieces suggest that the Indians may have been making their own lead at this early time. The object shown in Fig. 26, C, may have been a flintcap; E, a fishing sinker.

In over 150 storage-refuse pits and other features excavated at this site, only 1 lead musket ball, 1.0 cm in diameter, was found. This (Fig 26, D) has a number of large nicks on its surface. That it had been shot is attested by one flattened side. It is possible that lead was very precious to the inhabitants of this site and care was taken to see that none was lost. Unlike ceramic and stone articles, lead can be reformed into new objects "as good as new."

Shell Artifacts

A single fish lure (Fig. 26, A) resembles those of the Lake Winnebago focus. One of the 2 shell scrapers is shown in Fig. 26, B.

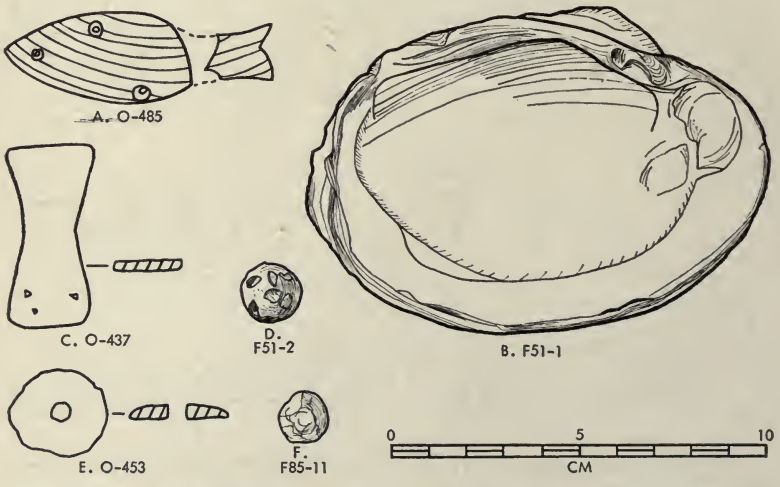

FIG. 26. Lead and shell artifacts. A, shell fish effigy; B, shell scraper; C, lead flintcap (?); D, musket ball; E, lead sinker (?); F, fired clay ball.

Smoking Pipes (Fig 27)

Pipes were made of clay, stone, catlinite, and kaolin. Most of the clay pipes of native manufacture bear a strong resemblance to, if not identity with, those of the Huron and Lalonde cultures of the western Ontario peninsula and are known in that area as the barrel pipe (Ridley, 1952). The annular in-

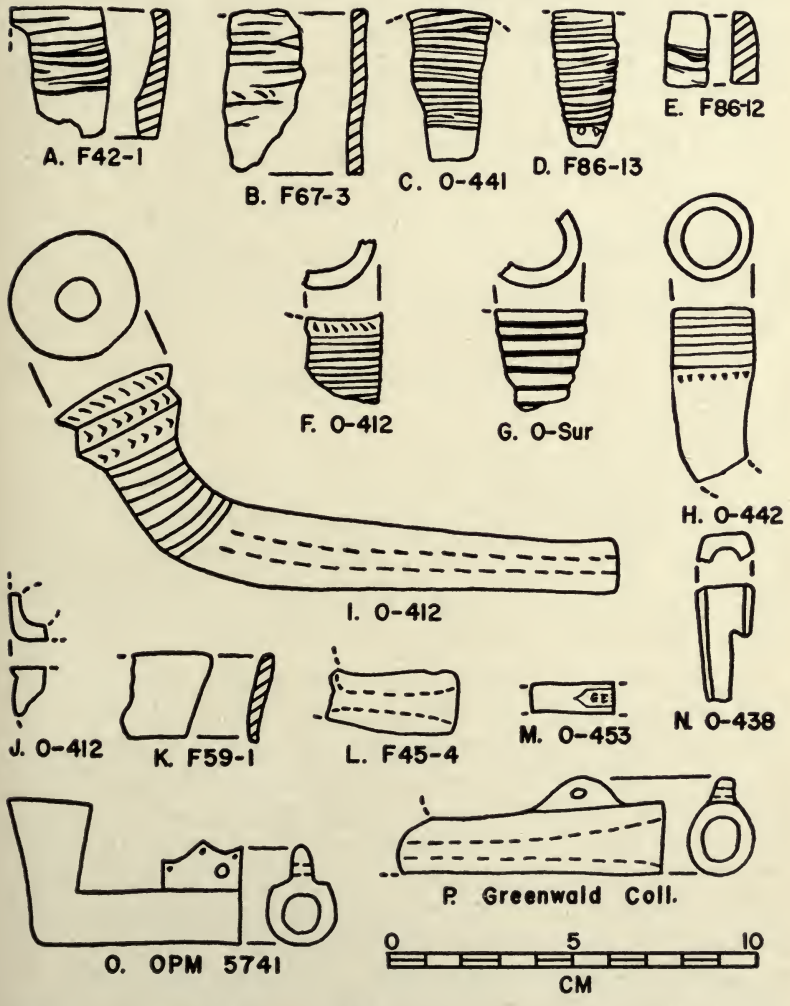

FIG. 27. Smoking pipes. A-I, ceramic; J-L, stone; M, kaolin; N-P, catlinite.

cising, with punctates below, is especially typical, as well as the Iroquois trumpet form. The holes in the stems were made by modeling the clay around a thick cord of twisted vegetable fiber which burned out during firing. The stems have a uniform taper toward the bit. The paste is identical to Type I pottery but contains much less tempering material. Some of these pipes are blackened, perhaps with grease, and polished. The presence of this form of pipe may have resulted from contact with the Tionontati, Huron, or Neutral groups, either in Wisconsin or at an earlier period in the Lake Huron area. A total of 27 pottery pipes, mostly fragmentary, were found.

Stone pipes occur in a variey of forms, mostly small, but only 5 fragments were recovered.

Two of the catlinite pipes are of the typical calumet form.

Three fragments of a kaolin trade pipe stem were found in the same feature. On 1, the letters GE are present with indications that the third letter was a B, F, or H.

PART II. ETHNOHISTORY

Introduction

In the following section I shall set forth the case for Fox tribal identification of the Bell site. Also, because it is of interest, I shall cite some of the documents which give contemporary observations on some of the customs for which there is archeological evidence at this site. Thirdly, such interpretations as the data warrant will be drawn.

Due to space limitations, the whole of Fox ethnography cannot be reviewed here. We are concerned chiefly with the period of Fox history from their earliest mention in historical records in 1640 until 1730; especially with those records which bear on their villages and customs. Many exploits, such as their attack on the fort at Detroit in 1712, or their wars with the Illinois Indians, * are not pertinent to this discussion. General accounts of the Fox are contained in the following: Kellogg 1908, 1925; Blair 1911; Temple 1958; and numerous writings by William Jones, Truman Michelson, and others.

* Except that the sherd shown in Fig. 17, D, may have come from a pot made by an Illinois captive.

Location

The Fox Indians called themselves **Mesquakie** (there are many variant spellings) which means "Red-Earth People." They were known to the Ottawa and Chippewa at **Outagami,** "Those Who Live on the Opposite Shore." Although Kellogg (1925:87, 88) interpreted this to mean that the Fox were living on the opposite side of Lake Michigan from the lower Michigan peninsula, I believe that the term better fits an earlier situation when the Fox were living on the southwest shore of Lake Huron and the Ottawa and Chippewa were on the north shore. The French name for this tribe was Renards, but more frequently the term, Outagami, was used on their maps and in their records.

A map published by Creuxius in 1660 (Karpinski No. 11) has the Huron name for the Fox placed in the Michigan "thumb" area. There are a number of other references to a "homeland" for the Fox in southeastern Michigan (Wittry 1963).

The Fox tribe is first noted in history in 1640 by its Huron name **Schenchiohronon** in le Jeune's list of tribes taken ". . . from a Huron map that Father Paul Ragueneau sent me" (JR 18:231-235). Le Jeune's listing was geographically arranged in that he grouped the northern and southern tribes, and presumably listed those of each from east to west. The very close linguistic relationship of Fox to Sauk, next Kickapoo, and then Shawnee, would fit this sort of geographical distribution.

While it is possible that the Fox were visited by Radisson and Grosseilliers in the Green Bay area prior to 1656 (Kellogg 1908:144), the first recorded contact with Frenchmen was at the Jesuit Mission of St. Esprit on the south shore of Lake Superior in 1665. A band of about 120 Fox Indians were visiting the mission and the **Jesuit Relations** states that "The country of the Outagami lies Southward toward the Lake of the Ilimouek (Lake Michigan)" (JR 51:43-45).

During the winter of 1665-66, the Fox formed a principal village presumably on the Wolf River in Outagamie County. The village was named **Ouestatinong** and was visited by Fr. Allouez in 1670, who reported that it was located 25 leagues

from the mouth of the Oconto River (WHC 16:67). Perrot, however, stated that Ouestatinong was 30 leagues from the Bay (Blair I:314). There are a number of contemporary maps which place an Outagami village on the upper Wolf River. The famous map of Lake Superior made by the Jesuits about 1671 and published in 1672 (Karpinski No. 13) places it on the east bank of the Wolf River. Marquette's map of 1673-4 (Kellogg 1907) places the village on the west bank. Maps attributed to Jolliet and one by Randin also place the Fox village on either the east or west side of the Wolf River.

The exact location of this early village has been in dispute, although most students have tended to adopt the suggestion of George R. Fox (1916:18), who selected a site near Leeman on the Wolf River in Outagami County. Old Indian trails went from Leeman to Green Bay and south toward Big Lake Butte des Morts (Fox 1916:21). In 1956 I briefly tested this site. We found postmolds in the pentagonal embankment figured by Fox. Cache pits and garden beds observed by Fox in 1915 were still in evidence, but the testing did not produce any conclusive evidence that this site was, or was not, Ouestatinong. Projectile point types collected there by local residents suggest a long span of occupation beginning in the Archaic, while one piece of trade brass found in our testing shows some occupation during the historic period.

Allouez and other Jesuit Fathers served the Mission of St. Marc at Ouestatinong from 1670 until 1678. Sometime during the period of 1678 to 1680 it is evident that the principal village of the Fox was moved southward to a location west of Lake Winnebago. Father Hennepin, who returned to Quebec from his visit to the Sioux via the Wisconsin-Fox waterway in 1680, noted that the Fox were living on the upper Fox River (1903:307). A letter from La Salle, dated 1682 (WHC 16:106) places the village on the shore of Little Lake Butte des Morts, a location which has been accepted by most students as the principal Fox village from this time until the late 1740's. Lahonton journeyed the Fox-Wisconsin route in 1688 and reported 2 Outagami villages on the upper Fox River (Kellogg 1908:151). It is not my purpose to argue whether or not a Fox village was located on Little Lake Butte des Morts. Rather, it is to selectively draw upon the histor-

ical sources for such positive evidence which indicates that the Bell site represents a Fox occupation site of the period 1680-1730. The bone of contention might be one of determining the location of the village which was attacked by Louvigny's army in 1716. I shall present evidence that it was the Bell site.

Soon after the move to the new location the contemporary maps showed locations for the Fox in the area west of Lake Winnebago. The Fox River is first designated as such on Hennepin's map of 1683 (Karpinski No. 18). It is worthwhile noting that it is the **upper** Fox which is so designated. **Franquinlin's map of 1684** (reproduced in Griffin, Map 8) **shows an Outagami village upon the exact location of the Bell** site. An earlier draft or copy of a draft of this map shows the name Outagami south of Lake Winnebago, but the village itself is not located (Griffin, Map 7).

Minet's map of 1685 (Griffin, Map 9) also located an Outagami village on the south shore of Big Lake Butte des Morts.

The area of Lake Winnebago on Coronelli's map of 1688 (Tucker, Plates IX, X) is distorted, but it seems that the name Outagami appears south of Big Lake Butte des Morts, evidently referring to the dot on the north side. Coronelli's map of 1695 (Karpinski p. 55), also distorted in this area, apparently places a Fox village in the same area as the preceding.

Louvigny's map of 1697 (Tucker, Plate XIV) shows Fox and Winnebago villages on the upper Fox River. It is interesting that on many maps made in the early 18th century, it is the **upper** Fox River that bears the name (e.g., Delisle, 1703, Karpinski No. 31; Senex, 1710; Karpinski No. 45).

In 1717 ". . . the [village of the] Sakis, [was located] twenty leagues from the village of the Fox Indians" (MPHC 33:589).

In 1718 "The Saquis are settled on the Same river as the Renards, and that River leads to the portages of the ouisconsin, which flows into the misissipy. . . . The Renards Are 18 Leagues from the Saquis" (WHC 16:371).

In July of 1723, 22 men, women, and children, of which 5 were Sauk and 2 were Winnebago, and the remaining were Fox, were massacred by the fifth Chippewa raiding party to

strike them that year "on the Shore of a Lake between the village of the Renards and the post of La Baye" (WHC 16: 430). This would indicate the Fox village was on the upper Fox river, west of Lake Winnebago.

In 1727 it was reported that the Winnebago village on Doty Island was 14 leagues from la Bay and 8 leagues from the Renards, indicating that the Fox village was 22 leagues from Green Bay (WHC 17:23).

In determining the location of "the" Fox village from the above descriptions, the distances should be calculated by water route from the Sauk village on the east side of the Fox river near its outlet to Green Bay, and from the Winnebago

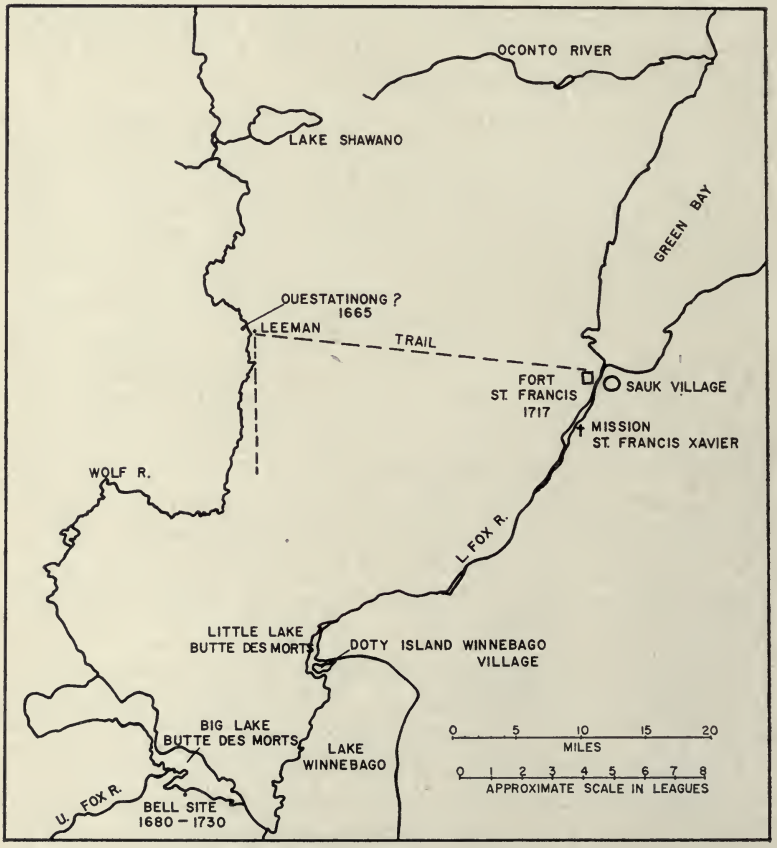

FIG. 28. Map of Central Wisconsin.

village on Doty Island at the foot of Lake Winnebago. It is quite evident that "the" Fox village would be on or very near the Bell site.

Finally there is the de Lery map drawn in 1730 (reproduced in Kellogg 1925:314) which shows 3 Fox villages including the "grand" village on the location of the Bell site. A spot just to the east of the grand village is designated as where the Fox were fortified in 1723. De Lery's map shows the Winnebago village on Doty Island and the Sauk village, but erroneously puts the location of the French fort at la Baye on the east side of the river instead of the west side.

A number of references and map sources have been cited which place the Fox tribe on the upper Fox River during the period 1680-1730. Several of the sources showed an Outagami village at the precise location of the Bell site. Since the trade materials from this site are entirely characteristic of the period, there remains little doubt that the Bell site was a Fox village. The presence of grenade fragments raises the question of whether this site might be the one attacked by Louvigny in 1716. Unfortunately, the published accounts of this episode give no hint as to the location of the battle. Previous workers have assumed that the village was on the southwest shore of Little Lake Butte des Morts.

In 1716 Louis de la Porte, Sieur de Louvigny, left Quebec on March 14 with 225 Frenchmen and a number of Indian allies. By the time this army left Michilimackinac it had grown to over 800. Its artillery consisted of 2 small brass cannon and a brass grenade mortar. (In 1721 Louvigny submitted his expenses for this war to the King. He charged for 4 cannon.) Louvigny's expenses (WHC 16:400-407) are too lengthy to reproduce here, but they are of interest because many of the trade articles listed were given to the Fox. The list also showed 100 grenades, 150 grenade fuses, 103 1-livre lead balls, plus powder and musket balls which lasted for 3 days and nights of bombardment before the Fox capitulated.

In his own account of the affair, Louvigny describes the Fox fortification as being of "triple oak stakes" with a ditch 1½ feet wide behind it (WHC 5:78-80). Charlevoix's report describes it as a "sort of fort, surrounded by three ranges of

oak palisades, with a good ditch in the rear" (WHC 5:81-85). This would allow the Bell site palisade to fit the description by assuming that our limited excavations uncovered only 1 of the 3 ranges.

So far as is known to the writer, the grenades fired by Louvigny are the only ones ever shot in central Wisconsin. On his return to Quebec, Louvigny left the mortar and cannon at Michilimackinac. It is possible that these might have been carried during Lignery's expedition against the Fox in 1728, but since the Fox villages were deserted when Lignery arrived there would have been no need to use artillery. If the grenade fragments were not actually fired into the Bell site by Louvigny in 1716, they were carried there from some other village. I consider the latter unlikely.

De Lignery, who had served under Louvigny in 1716, led the French forces during the "second Fox war" in 1728. This time the army consisted of 450 Frenchmen and 750 to 1000 Indian allies. Again, there are no specific data as to village locations in the published accounts. The reports (WHC 5:85-95; 10:47-53; 17:28-29) describe the burning of the deserted Winnebago village on Doty Island and the burning of 3 or 4 deserted Fox villages. It is most likely that these are the villages shown on the de Lery map of 1730.

In 1730 the main group of Fox, while attempting to flee to the Iroquois, were trapped at a hastily-built fort near Arrowsmith in central Illinois. After a siege of 23 days, hunger forced the Fox to seek an escape, but the crying of their children caused them to be discovered. Over 600 Fox men, women, and children were massacred with only 50 or 60 making good their escape (WHC 5:107, 108; 17:100-102, 109-118, 129, 130).

Present day Fox Indians live on their own land in central Iowa.

Bear Ceremonialism

Father Allouez reported in the **Relation** of 1676 that "these animals were extraordinarily numerous to the west of Green Bay and Lake Michigan" (Blair I:132n). "Among the peoples of the Bay of Puans, the head of the slain bear received

the adoration of the guests occupied with eating its body" (Blair I:129n).

Perrot reported "there are only three or four who must without fail eat the head, blood, and haslet of the bear; and each of the others [must eat] a slice of the fat a brasse in length (which is distributed among them as equally as possible), if they are to expect the god of the earth to grant to the village his favor and abundance of his blessing" (Blair I:130-1).

Charlevoix, who visited there in 1721, later wrote that the tribes who dwell near the Bay "have special veneration for the Bear; as soon as they slay one of these, they make a Feast, accompanied by very singular ceremonies. The Bear's head, painted with all sorts of colors, is placed during the repast upon raised place, and there receives the homage of all the Guests, who celebrate in song the praises of the Animal, meanwhile cutting its body into pieces and regaling themselves thereon" (WHC 16:416-7).

Dog Sacrifice

The early accounts contain several descriptions of the eating of dogs, mostly under ceremonial circumstances, but also for calories. References to dog sacrifices are:

From Chequamegon Bay, Father Allouez wrote, in reference to the upper Algonkian tribes, "I have seen an Idol set up in the middle of a Village; and to it, among other presents, ten dogs were offered in sacrifice, in order to prevail on this false god to send elsewhere the distemper that was depopulating the Village. . . . During storms and tempests, they sacrifice a dog, throwing it into the lake" (JR 1667, WHC 16:51).

Perrot states, "But before they undertake voyages that are rather long they are careful to kill some dogs with their clubs, and to hang the bodies from a tree or pole; sometimes also they suspend thus dressed skins of elk, or moose, or deer, which they consecrate to the sun or the lake, in order to obtain fair weather" (Blair I:60).

According to LaPotherie, "In case of sickness they feast on dog's meat and sacrifice dogs by killing them with an axe, tying them to a sapling with their noses pointed east or

TABLE 3. TRAIT LIST

Entirely Aboriginal	Aboriginal	European
Housing	1 rectangular wall trench house 1 circular wigwam cattail mats (charred remains) birchbark (charred remains)	
Food	storage pits corn, squash, wild plum see Parmalee's faunal analysis	
Ceremonial	3 skulls from medicine bags 7 large bone tubes 4 wing fans dog sacrifice bear ceremonialism	
Burial	partially flexed in grave or storage pit	
Stone Processing	288 chert flakes 2 hammerstones 5 antler drifts 7 antler flaking implements	
Abrading and Honing	1 sandstone shaft smoother 3 grinding stones 3 arrowshaft wrenches	
Predominantly Aboriginal		
Hunting and Warfare	21 "long" projectile points 14 "wide" projectile points 9 unclassified projectile points 19 bone and antler projectile points 5 Indian-made gunflints 2 galena cubes palisaded village	1 triangular brass projectile point 5 conical brass projectile points 4 musket parts 1 lead musket ball 9 French gunflints 1 lead flintcap 3 lead fragments 3 grenade fragments
Fishing	4 bone harpoons 1 shell fish lure	17 iron fish gorges and awls 1 lead fishing sinker (?)
Agricultural Implements	1 antler hoe	1 iron hoe or adze

	Aboriginal	European
Domestic Containers	1 pottery vessel (restored) 1312 potsherds 11 turtle shell bowls	1 brass kettle, fragmentary 9 kettle lugs 151 fragments from kettles 2 glass bottle fragments
Mat Making and Fabric Processing	25 bone mat needles 5 fiber shredders 1 bone hook 1 bone needle	1 brass thimble (tinkler) 3 iron needles (?) fragments of linen cloth, brass-wrapped threads
Smoking Pipes	1 pottery pipe 26 pottery pipe fragments 5 stone pipe fragments 3 catlinite pipes	3 kaolin pipestem fragments
Games and Amusement	7 deer phalanges (cup and pin game) 1 bone die	1 Jew's-harp
Predominantly European		
Jewelry and Ornaments	4 catlinite pendants 1 bone paint "brush" 3 bone bracelets 13 small bone beads and tubes	123 glass beads 43 brass tinklers 8 Jesuit rings 9 rolled brass tube beads 1 brass bracelet 3 brass bells 1 brass tinkler (thimble) 5 mirror fragments
Drilling and Perforating	1 chert drill 5 bone handles for iron tools 1 bone awl	17 iron awls and gorges
Cutting and Scraping	1 stone adze 1 chert scraper 1 chert knife	4 iron axes 1 iron adze or hoe 19 iron clasp knives 4 iron butcher knives
Miscellaneous	2 elk antler plaques	1 Indian-made brass button 1 iron key 1 firesteel brass covered linen thread

west and painted with vermillion (Blair I:234).

On dog feasting, Perrot reports, "This feast [given by one who dreams of a divinity] is one of dog's flesh, which [among them] is ranked as the principal and most esteemed of all viands; and they serve with it several meats, as the flesh of the bear, the elk, or any other large game. If they have none of these, they supply its place with Indian corn, which they season with grease and then pour it out on the plate of each guest. You will note that, in order to render this repast a solemn one, there must be a dog, whose head is presented to the most prominent war-chief, and the other parts are given to the warriors" (Blair I:53).

Acculturation

Although the artifact descriptions are presented according to the more traditional method by categories of raw material, the Trait List (Table 3) is organized to reveal two other items of information. First, the list is organized according to presumed functions of the artifacts; secondly, according to the amount of European "influence" present in each category. Since we are dealing almost entirely with material remains, the European influence is represented only by the less perishable remains of trade goods. Maxwell and Binford reported that a number of items for which there is documentary evidence of use of Fort Michilimackinac were not represented in the archeological record. We can reasonably assume that such is also the case here.

When the Fox Indians were visited in their Wolf river village by Sauk chiefs accompanied by Perrot, Baudry, and 6 other Frenchmen in 1668, the Fox were "destitute of everything. These people had only five or six [iron] hatchets, which had no edge, and they used these by turns, for cutting their wood; they had hardly one knife or one bodkin to a cabin, and cut their meat with the stones which they used for arrows, and they scaled their fish with mussel shells" (La-Potherie in Blair I:317, 318). The Trait List, then, is a reflection of how much acculturation in material culture had taken place during the next 50 or 60 years. It can be seen that iron axes, knives, and bodkins, which were apparently the only trade materials present in small quantities in 1668,

almost completely replaced stone axes, knives, and scrapers within a few years. European jewelry and ornamentation appear to have been as popular with the Indians as generally represented by the popularizers of history.

Contact with Other Indian Groups

Prior to the historic period the region surrounding the Bell site was dominated by the Lake Winnebago focus, a manifestation which W. C. McKern (1945:172) has identified as the preliterate culture of the Winnebago Indians. At the time of Nicolet's visit in 1634, the territory around the head of Green Bay, the Fox River valley, and Lake Winnebago was the habitat of the Winnebago. North of them were the Menominee.

There are numerous historical records to show that when the Fox, Sauk, Potawatomi, and other Central Algonkian Indians penetrated this area in the decades after Nicolet's visit, these tribes formed mixed villages as well as settlements restricted more or less to one tribe. However, even on sites of the latter nature, one could not expect to find a "pure" tribal artifact assemblage, since the historical records also indicate a good deal of intermarriage, slavery, and other forms of interaction where an exchange of both material and nonmaterial traits was probable.

Since the aboriginal cultures of the Sauk, Kickapoo, Potawatomi, and other tribes known to have been in the area have not yet been identified, we are limited to the Lake Winnebago focus in comparing the Bell site trait list. Traits shared may be due to the recent contact between the Fox and Winnebago or may be a result of common adaptations and long-time communication among the several tribes of the Upper Great Lakes area.

The following list is of those traits present at the Bell site and in the Lake Winnebago focus. McKern's (1945:153-7) terminology is used, but it should be pointed out that many of the traits listed are of a generalized nature and are not particularly significant for purposes of showing a particular relationship between the two cultures.

Burial outside mounds
Flexed inhumation

Burial singly or with infants
Placement of pots (or kettles) and implements with dead
Fish effigies of shell
Bone mat needles
Split bone perforators
Bone tubes, undecorated
Bone tubes, decorated
Dressed antler projectile points
Dressed antler "counters"
Antler-tip implements
Antler "flaking tools"
Preponderance of bone and antler implements over chipped stone (this may be due in part to the presence at the Bell site of trade materials which are lacking at the sites reported by McKern)
Use of sheet copper (brass at the Bell site)
Sheet copper (brass) tubular beads
Sharpening stones
Arrow-shaft rubbers
Chipped stone triangular points
End scrapers
Shell-tempered pottery
Notched and scalloped lips (slightly variant at the Bell site)
Pottery loop (i. e., strap) handles broad and flat in cross-section
Pottery loop handles vertically ribbed
Decoration above shoulders of pottery vessels
Pottery patterns of punctate dots and incised lines
Decorations on pottery loop handles
Straight-lined pottery decorative techniques
Preponderance of undecorated pottery (also listed by McKern for Lake Winnebago focus is "preponderance of decorated pottery")

In addition to the above, other "Mississippian" traits present at the Bell site are: stockade enclosure, wall trench house, and bone harpoon points. Certain of the above traits are more or less characteristic of the Lake Winnebago focus (though they may have a wider distribution) and in the judgment of

the writer indicate contact between the Fox and Winnebago at this site. They are:

Fish effigy of shell
Arrow-shaft smoother of the paired type
Shell-tempered pottery
Straight-lined pottery decoration motifs (especially the triangular areas of opposed diagonals) and punctate decoration.

It should be noted, too, that if the Miami were the possessors of the Fisher culture, there would be at least one, and probably several others of the Central Algonkian groups which participated to varying degrees in Upper Mississippi

TABLE 4. SERIATION OF SELECTED FEATURES AND ARTIFACTS

Fea. No.	Long Points	Type I Pottery Without Incising	Type I Pottery Incised Decoration	Type II Pottery	Wide Points	Shell-Tempered Pottery	No. of Trade Articles
O-425	1	3	0	0	0	0	1
O-434	1	1	0	0	0	0	1
O-429	1	1	0	0	0	0	6
F79	1	15	0	0	0	0	2
F29	1	4	0	0	0	0	3
F47	1	4	0	0	0	0	3
O-423A	2	0	0	0	0	0	5
F66	1	8	54	0	0	0	8
F14	1	19	0	0	0	0	15
F65	1	1	6	0	0	0	17
F64	1	5	1	0	0	1	8
F69	1	7	0	1	0	0	0
F3	2	50	0	91	0	0	9
O-435	1	0	0	0	1	0	6
F86	1	28	2	0	2	0	4
F55	1	7	2	0	1	0	10
F45	2	27	0	0	1	0	6
F85	1	55	3	1	1	0	9
F30	0	3	43	0	3	0	1
O-446	0	56	0	2	1	0	4
F70	0	4	0	1	1	0	0
F2	0	0	0	3	1	0	0
F93	0	47	14	4	1	1	6
F32	0	1	0	4	1	0	4
F89	0	11	1	2	0	3	4
O-406-2	0	3	1	2	0	0	0
F94	0	9	6	0	0	1	7
F13	0	4	0	4	0	1	1
O-428	0	1	0	1	0	0	10
O-406-3	0	0	0	7	0	3	1

cultural developments of the Upper Great Lakes area. In view of the fact that there is a distinctive pottery type at the bell site which is most likely Fox, the small amount of shell-tempered pottery is taken as evidence of actual intermingling with the Winnebago, though no distinctive Lake Winnebago focus rimsherds were found.

Temporal Change

Twenty-four storage/refuse pits, containing "long" and "wide" projectile points, plus 6 additional pits containing potsherds other than Types I and II only, are listed in Table 4. The listing was made to test the writer's suspicion that there was a tendency for the long points to be associated with Type I pottery, and for the wide points to be associated with Type II pottery. Table 4 does demonstrate this to a remarkable degree, especially when one considers the probable manner in which the pits were filled and some mixing is to be expected. The table has been roughly seriated, with those pits which probably were filled relatively early during the occupancy of the site placed near the top. Pits thought to represent a somewhat later period of occupation are placed near the bottom of the list. The direction of this seriation is indicated by the fact that Fea. 69 was partly superimposed by Fea. 70. I believe, on the basis of historical evidence, that the early occupation represents a relatively pure Fox village and that the long projectile point type and Type I pottery are assignable to this tribe.

I further interpret that the presence of the wide projectile point type and Type II pottery is due to members of some other tribe(s) coming to live with the Fox as spouses, allies, or slaves. The proportion of wide points to Type II pottery is much greater than the proportion of long points to Type I pottery. It is possible that, during the later occupation, the art of pottery making was already suffering a marked decline due to increased availability of brass kettles.

Table 4 also lists the associations, in the 30 selected pits, of incised Type I pottery, shell-tempered pottery, and number of trade articles. The fact that trade materials appear in almost every pit, including those pits not included in the table, shows that this site was occupied entirely during the historic

period. The nature of the trade goods present indicates a temporal placement in the early historic period (prior to 1760) as defined by Quimby (1939). Elsewhere in this paper I have presented evidence indicating that the occupancy of the Bell site falls between 1680 and 1730. I can detect no difference in the kind of trade materials between the pits of the early and later occupations. I would roughly assign the early occupation as prior to 1715 and the later occupation after this. In 1716 the Fox received an unusually large amount of trade goods, some of which appear on Louvigny's expense account for the war against them in 1716 (WHC 17:400-407), and some of which were brought in privately, since one of the inducements for getting Frenchmen to join this army was the opportunity for conducting private trade.

The incised decoration on Type I pottery and shell-tempered pottery tends to be found in pits of late occupation. Both of these traits are probably due to increased contact with the Winnebago.

Type II pottery and the wide projectile point type also result from contact with some other tribe(s), but the identification is not easily made. Type II pottery, except for paste and general vessel shape, is not at all like Type I pottery, and in all likelihood represents a product of potters with a separate background. Since no intermediate "hybrid" vessels of these two types were present, it would seem that their makers had only recently come to live together.

The historical records indicate that the Fox had intercourse with the Sauk, Kickapoo, Potawatomi, Menominee, and other groups in Wisconsin during this period. They also had briefer contacts through warfare or trade with the Pawnee, Sioux, Iowa, Illinois, Iroquois, Shawnee, Chippewa, Huron, Ottawa, and other groups. The assignment of Type II pottery to a specific tribe with the present data is mostly a matter of guesswork. Of all the tribes, the Sauk and Kickapoo were the closest to the Fox in language and presumably also in culture. The linguistic similarities are so close that these three tribes must have lived near each other during their prior residency in Michigan. It is possible that the Sauk and Kickapoo possessed ceramics which are indistinguishable from Type I pottery. This would eliminate my favorite candidate,

the Sauk, as the makers of Type II pottery. But if that were the situation, some other Central Algonkian group not so close to the Fox could be the author. The Potawatomi or Mascouten seem the next most logical as a tentative correlation. I am confident that additional work in the future will give Type II pottery a more definite tribal assignment.

Summary

For the first time, the aboriginal culture of the Fox Indians has been partially revealed. The Bell site was occupied during the period 1680-1730, a critical time when aboriginal material culture was utilized side-by-side with European equivalents. Early during this period, however, stone axes, knives, scrapers, drills, and bone awls were replaced by iron implements. Brass and glass were also taking their toll of native implements and ornaments.

Historical records of bear ceremonialism, dog sacrifice, the medicine lodge, food, housing, and other customs have been supplemented by archeological data, or vice versa.

Investigation of the Bell site was a salvage project. The resources were limited and again I wish to express my sincere thanks to Neil Ostberg, the Scouts and staff of the Oshkosh Public Museum, the illustrators of this report, and all others who aided or abetted the work.

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VERTEBRATE REMAINS FROM THE BELL SITE, WINNEBAGO COUNTY, WISCONSIN

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Introduction

Recovery of a large quantity of bone refuse from the Bell Site (Wn9) has brought to light interesting data concerning the food economy of these people and the faunal complex of the region. This early historic site was situated on the south shore of Big Lake Butte des Morts (an enlargement of the upper Fox River), five miles west of Oshkosh, Winnebago County. It was excavated during June, 1959, by members of the Oshkosh Public Museum Explorer Scout Post under the direction of Dr. Warren L. Wittry, then Curator of Anthropology of the State Historical Society of Wisconsin. During the preceding year, Mr. Neil Ostberg of Milwaukee and a few other amateur archeologists tested the site and recovered some artifactual material and a limited quantity of bone. A few months before the final dig was completed in June, 1959, Dr. Wittry and other professional and student archaeologists excavated several test areas. Gravel mining operations in July, 1959, destroyed most of the remaining portions of the site.

From an archaeological standpoint the Bell Site is somewhat unique in that the inhabitants were still making and using their own pottery, projectile points and bone tools, while they had also accepted and were using European trade goods. Contact with the Whites had not yet drastically altered their mode of life; the recovered artifact assemblage suggested a material culture that was half historical and half aboriginal. Although possibly a mixed village, the principal inhabitants of this site were apparently Fox as evidenced by the types of trade goods recovered and by early maps (e.g. by Franquelin in 1684; Griffin, 1943) and contemporary accounts of the various Indian tribes in the region. According to Wittry (pers. comm.), two types of pottery vessels were encountered; both were grit tempered, wide-mouthed jars of similar shape but one had a smooth surface with implement punctates on the lip of the high, slightly everted rim. The other had a cord-marked body, smoothed neck,

with a finger-pinched lip. Projectile points were small and triangular in shape; bone artifacts consisted of turtle carapace bowls, harpoon and projectile points, antler tines and discs, awl handles, needles, beads and tubes.

Exact dimensions of the site were no longer discernible, but Wittry has estimated that the original village covered at least four acres. There is evidence (long trenches) to the effect that a stockade had been built around at least a portion of the village. Judging from the number of cache pits uncovered and the quantity of charred wild plum seeds, squash stems and corn cobs, this semi-permanent (?) village site appears to have been occupied primarily during the summer months. Probably a large portion of these Indians' subsistence was derived from hunting and fishing, but the recovery of plant remains and agricultural implements (e.g. iron hoes), plus the abundance of cache pits—probably used originally for the storage of corn—points to the importance of crops in the livelihood of these people.

The exact period of occupancy by Fox at the Bell Site is difficult to establish, but Wittry has estimated it to be between 1680 and 1730 with the most intensive occupation occurring around 1716-1730. The evidence for this is based on the type of trade goods recovered (Jesuit rings, large glass and porcelain beads, copper kettles, iron axes and hoes, brass projectile points, kaolin pipes) and, again, on early historic French maps and written accounts dealing with the Indians of the region.

Although only a small part of the original site was excavated, a large quantity of bone was found in the storage-refuse pits and midden debris. Approximately 11,200 bones were recovered, and of this total nearly 25 percent were identifiable to the genus or species level (Table I). A minimum of 72 vertebrate species were recorded from the Bell Site faunal samples. Apparently the Indians occupying this site made little use of the fresh-water mussels; ten species were determined from the small number (57) of valves encountered, and shell of **Lampsilis ventricosa** and **L. siliquoidea** accounted for 61 percent of this total.

Acknowledgement: I would like to express my sincere appreciation to Dr. Warren L. Wittry, Assistant Director,

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TABLE I

VERTEBRATES IDENTIFIED FROM THE BELL SITE, WISCONSIN

Species	Total Number of Identified Remains
Fishes —	
Bass, Crappie, Sunfish group, Centrarchidae	375
Suckers and/or Buffalofish, Catostomidae	173
Bullhead, **Ictalurus** spp.	164
Sturgeon, **Acipenser** cf. **fulvescens**	134
Fresh-water Drum, **Aplodinotus grunniens**	115
Bass, **Micropterus** sp.	102
Bowfin, **Amia calva**	81
Catfish, **Ictalurus** sp.	74
Sucker, **Catostomus** sp.	52
Pike, **Esox** sp.	48
Gar, **Lepisosteus** sp.	44
White Bass, **Lepibema chrysops**	28
Crappie, **Pomoxis** sp.	21
Northern Pike, **Esox lucius**	20
Walleye and/or Sauger, **Stizostedion** sp.	16
Redhorse, **Moxostoma** sp.	10
Catfish sp.	8
Flathead Catfish, **Pylodictis olivaris**	4
Sunfish, **Lepomis** sp.	2
Sunfish (Pumpkinseed?), **Lepomis** cf. **gibbosus**	1
Yellow Perch, **Perca flavescens**	1
Reptiles: Snakes —	
Rattlesnake, **Crotalus** cf. **horridus**	3
Reptiles: Turtles —	
Snapping Turtle, **Chelydra serpentina**	90
Turtle spp.	79
Painted Turtle, **Chrysemys picta**	25
Graptemys, Chrysemys, Emydoidea group	22
Blanding's Turtle, **Emydoidea blandingi**	9
Soft-shelled Turtle, **Trionyx** sp.	3
Map Turtle, **Graptemys** cf. **geographica**	1
Birds —	
Passenger Pigeon, **Ectopistes migratorius**	55
Duck spp.	25
Canada Goose, **Branta canadensis**	12
Lesser Scaup and/or Ring-necked Duck, **Aythya** sp.	12
Sandhill Crane, **Grus canadensis**	11
Trumpeter Swan, **Olor buccinator**	8
Small Passerines	6
Mallard and/or Black Duck, **Anas** sp.	5
Bald Eagle, **Haliaeetus leucocephalus**	5
Great Horned Owl, **Bubo virginianus**	5

Hawk, probably Red-tailed Hawk, **Buteo jamaicensis**	4
Flicker, **Colaptes** cf. **auratus**	3
Long-billed Curlew, **Numenius americanus**	3
Goose, **Branta canadensis?**	3
Swan, **Olor** sp.	3
Merganser, **Mergus** sp.	3
Whip-poor-Will, **Caprimulgus vociferus**	3
Woodpecker, Red-headed and/or Red-bellied?	2
Common Crow, **Corvus brachyrhynchos**	2
Common Raven, **Corvus corax**	2
Hawk, sp.	2
Grouse, sp.	2
Teal, **Anas** sp.	2
Redwinged Blackbird, **Agelaius phoeniceus** —probably	1
Long-eared or Short-eared Owl, **Asio** sp.	1
Redhead, **Aythya americana?**	1
Canvasback, **Aythya valisineria?**	1
Hooded Merganser, **Lophodytes cucullatus**	1
Sharp-tailed Grouse, **Pedioecetes phasianellus** —probably	1
Wood Duck, **Aix sponsa**	1
Snow or Blue Goose, **Chen** sp.	1
Grackle, **Quiscalus quiscula**	1
Mammals —	
White-tailed Deer, **Odocoileus virginianus**	344
Beaver, **Castor canadensis**	266
Canid, probably Dog, **Canis familiaris** (plus three additional burials)	165
Black Bear, **Ursus americanus**	72
Muskrat, **Ondatra zibethica**	32
Raccoon, **Procyon lotor**	28
Elk, **Cervus canadensis**	9
River Otter, **Lutra canadensis**	7
Gray Wolf, **Canis lupus**	6
Vole, **Microtus** sp.	5
Small Rodents	4
Woodchuck, **Marmota monax**	4
Red Squirrel, **Tamiasciurus hudsonicus**	3
Porcupine, **Erethizon dorsatum**	2
Cottontail, **Sylvilagus floridanus**	2
Bison, **Bison bison** — probably	2
Fisher, **Martes pennanti**	2
Weasel, **Mustela** sp.	1
Mink, **Mustela vison**	1
Striped Skunk, **Mephitis mephitis**	1
White-footed Mouse, **Peromyscus** sp.	1
Chipmunk, **Tamias striatus**	1

Accounts of Species

Fishes. Approximately 1,500 fish bones were identified to the family, genus, and/or species level, these representing a minimum of 17 species. In addition there were nearly 4,000

unidentifiable fish bone fragments; the variety of species and quantity of remains recovered attest to the importance and extensive use made of this vertebrate group by these Indians. Lake Butte des Morts and the Fox River formed an excellent habitat for a variety of species which apparently occurred in great abundance.

The quantity of centrarchid (bass, crappie, sunfish) remains, approximately 36 percent of the total identifiable fish bones, indicates that the river-lake waters were cold and clear. Bones of the redhorse and white suckers also suggest a river condition of this type, possibly with longer stretches of sand-gravel bottom than now exists. Modern agricultural practices along the Fox River and the building of dams have increased the sediment content and brought about greater level fluctuations. Those factors, combined with commercial and sport fishing, have altered the species composition considerably since the Bell Site was occupied. Numerous remains of the sturgeon are indicative of an abundant former population, but this species is now uncommon in the Fox River. Rough fish such as gar and bowfin have increased in numbers while the populations of several species of "game fish" (e. g. northern pike) have decreased.

Within a given species, individuals varied considerably in size although the majority of bones of sturgeon, suckers, white bass and catfishes (**Ictalurus** and **Pylodictis**) were from large fish. One of the flathead catfish weighed approximately 30 pounds and several of the channel (?) catfish (**Ictalurus**) at least 8-10 pounds. As was also the case at the Aztalan Site (Parmalee, 1960a), catfishes, bullheads and the freshwater drum were taken in considerable numbers by these people. Because of the variation in size of the different species of fish, probably several methods of taking them were employed. Recovery of two bone (or antler) harpoon points suggest the use of fish spears; many of the small fish were probably caught in traps or nets. Regardless of the methods of capture, fish was one of the more important food items used by the Bell Site inhabitants.

Reptiles. Three snake vertebre were found in one of the many storage-refuse pits; they were from a large crotalid,

probably the timber rattlesnake. These remains are of no archaeological significance, the snake possibly occurring incidentally to human occupation of the area, but they are of zoological interest. The presence of these vertebrae point to the former occurrence of the timber rattlesnake in this area, a region considerably northeast of this snake's present range in Wisconsin.

At least five species of turtles, all aquatic, were identified from the Bell Site faunal materials. The number of remains, and individuals represented, was not large; however, turtles were probably taken when encountered, the flesh being eaten and the carapace of many smoothed and used as dishes or bowls. Bones of the snapping turtle were the most numerous, the majority having been from medium-sized to large adults. None of these remains had been worked; thus, it appears that the snapping turtle was taken and used only for food. Many shell fragments were too small for identification, even to the genus level, but most were probably those of the map, painted or Blanding's turtle.

Blanding's turtle is a semi-aquatic species with a carapace shaped not unlike the deeply concave shell of the box turtles. Shells of at least six individuals were recovered that had been altered by scraping and smoothing for apparent use as a bowl. Three carapace sections of the painted turtle had been worked in a like manner. These turtle shell bowls are of interest since their manufacture is characteristically a prehistoric trait, yet they were still being used by these historic Fox even though comparable metal trade goods (kettles, etc.) were also being used by them.

Birds. Although the variety of bird species taken by the occupants of the Bell Site is impressive (at least 28 species) the number of each was small. Apparently the greatest hunting efforts were directed at procuring fish and mammals, and birds were utilized only to a limited extent for food and, in some instances, for ornaments and/or ceremony (?). Although waterfowl (ducks, geese, swans) remains comprised 41 percent (about 11 species) of the total number of identified bird bones, this number (76) is small considering the site location. Lake Butte des Morts and its surrounding

marsh land abounded with wild rice and other aquatic plants, making it an ideal waterfowl habitat. It may be surmised that these Indians were either little interested in hunting waterfowl or, as suggested previously, this village was occupied primarily during the summer months. Assuming the latter to be correct, waterfowl in any numbers were not available to the inhabitants, the majority of birds having already passed through the area during spring and fall migrations. Passenger pigeon remains (30 percent of the identified bird bones) were those of adults; probably the pigeons were taken during migration, but the small number of individuals used are indicative of their minor role in the diet of these Indians.

The complete lack of turkey bones from the storage-refuse pits at the Bell Site is truly surprising. This bird was common in Wisconsin in early times and remains of it have been recovered in sites dating from the Archaic and Woodland periods (Parmalee 1959 and 1960b) up to the Middle Mississippi culture (Parmalee, 1960a). The absence of turkey might be attributed to the fact that, after the winter flocks had scattered and broken up into nesting pairs, the few birds in the immediate vicinity of the village did not justify the Indian's time and effort in hunting for them.

Several birds such as the crow, raven, woodpecker, hawk, owl and eagle may have been killed and utilized for purposes other than food. It has been pointed out that "Probably numerous species of birds such as hawks, owls, eagles and cranes were taken for their plumage rather than for food" (Parmalee, 1957). This appears to be true in several instances at the Bell Site. Paired carpometacarpals and the corresponding digit 2, phalanx 1 (bones to which the large flight feathers are attached) of a great horned owl were found in a storage-refuse pit. One of the carpometacarpals bore evidence at the proximal end (groove of carpal trochlea) of having been severed (or scraped after being cut free) from the inner wing bones; these owl wings were probably used as fans or some type of body adornment. Three left carpometacarpals of the Canada goose from other pits had also apparently been used in the same manner, the proximal

ends having been cut and scraped smooth. Cut and/or scraped proximal ends of carpometacarpals of the bald eagle, raven, and another great horned owl were also found at this site.

The trumpeter swan was a common migrant along the Mississippi River in prehistoric and early historic times, and it occurred in limited numbers eastward as far as central Pennsylvania. All of the few remains of **O. buccinator** from the Bell Site were cut and/or worked sections of wing bones. Two cut humeri ends were typical of the many recovered at the Cahokia Site in Madison County, Illinois (Parmalee, 1957) and at the historic Sauk-Fox site in Rock Island County, Illinois (Parmalee, Unpub. MS.), these cut ends probably having been discarded as the shaft was further cut and fashioned into tubes and beads. Two of the four cut and polished humeri sections of this swan had been engraved, this type of bird bone artifact also occurring not uncommonly at the Rock Island County site (Parmalee, Unpub. MS.). A 3¼ inch bone tube, cut from the proximal end of an ulna (probably trumpeter swan), and two cut humeri ends (possibly sandhill crane) were also recovered at the Bell Site.

Mammals. Bones of the white-tailed deer were the most numerous of all the identified mammal remains, comprising 36 percent of the total. The quantity of beaver remains (28 percent) attest to the importance of this animal in the diet of these people; they may also suggest a beginning of intensified fur trapping activities since contact with the White fur traders was rather quickly bringing about a change in the Indian's economy due (in part) to a demand for certain fur-bearing species. Considering the quantity of meat provided by one animal, the number of bones recovered indicate that the deer had been the basic meat staple, supplemented largely with beaver and black bear.

Apparently little attempt had been made to utilize rabbits, squirrels, woodchucks and other small mammals. Although bones of the muskrat and raccoon were the most numerous of this group, together they comprised only six percent of the total. Judging from the paucity of remains, elk were

uncommon to rare in the area. Bison, tentative identification being made on a toe bone and proximal end section of a humerus, were also apparently rare in the vicinity of the Bell Site village.

If the number of bones of the three dog burials listed in Table I were combined with those scattered remains (165) recovered from the various pits, the total would comprise a large percentage of the identified mammal bones. Domestic dogs were evidently common in the village as evidenced by three complete burials (2 adults, 1 half-grown pup), a fourth partial (intentional?) burial, and numerous canid bones in pits. The interment of several animals suggests the fact that certain dogs were held in considerable esteem; none of the bones from these burials exhibited cut marks that would have indicated that they had been butchered. However, several of the scattered canid remains (e.g. humeri, vertebrae, radii, skull) bore cut marks at the ends or points of articulation (zygomatic arch of the skull), thus indicating that in some instances dogs were butchered and eaten.

Bear ceremonialism among the Indians is a well known and documented trait (Hallowell, 1926). There was evidence from the Bell Site to indicate that the black bear was an important food animal and also one of special religious or ceremonial significance to the occupants. The number of bones recovered was only moderately large (72, representing 7½ percent of the total), but the amount of edible meat from a single bear (a minimum of six individuals represented) is large, and the bear, along with deer and beaver, probably ranked as a major food animal to these people.

One of the most interesting aspects of the Bell Site faunal materials was the use of the black bear in ceremonial activities. Two complete bear skulls were found that had been used as part of the bear ritual, and sections and fragments of two or three other skulls may, as evidenced by cut marks and "breaks", have also served in a like capacity. The skull and complete lower mandible of a large adult bear was found in a storage-refuse pit, the mandible having first been placed in the pit and then the skull placed on the mandible in an inverted position. This skull and one of a young animal from another pit had a portion of the cranium (par-

ietal-temporal) broken away (Plate I), probably for removal of the brains.

With reference to the Fox, Potawatomi and other groups in the Green Bay region, Pierre Charlevoix related a noteworthy observation of bear ceremonialism in his **Journal historique** of 1744 (Thwaites, 1902). "They have especial veneration for the Bear; as soon as they slay one of these animals, they make a Feast, accompanied by very singular ceremonies. The Bear's head, painted with all sorts of colors, is placed during the repast upon a raised place and there receives the homage of all the Guests, who celebrate in song the praises of the Animal, meanwhile cutting its body into pieces and regaling themselves thereon."

In addition to the worked wing bones, harpoon points and turtle carapaces, a carved bone projectile point, a bone disc, a carved iron awl bone handle, worked elk(?) and deer phalanges (cup-and-pin game), bone "counters", sections of cut antler, and antler tines and projectile points were also found in the various pits. A foot bone (metatarsal) of a large canid, probably a gray wolf, was found that had the ends ground and the entire surface smoothed and polished; the bone had apparently been handled or carried extensively, possibly as part of a medicine bag.

Of special interest was the recovery of a complete mandible and the corresponding anterior half of an otter skull; the condyloid process of the left mandible bore several cut marks (made during removal from mandibular fossa) and the posterior half of the skull had been cut off (across the frontal). In another storage-refuse pit Wittry found a fisher skull that had had the posterior occipital region cut away and the entire half of the skull broken (?) off immediately behind the zygomatic process of the frontal. Only the posterior section (ramus, angular process) of the lower left mandible accompanied the skull, the body of the jaw having been cut-broken off on an angle with the ramus. These two skulls had been of particular significance and may have been part of medicine bags (Plate II).

In summary, the faunal materials from the Bell Site showed that, in addition to the limited(?) agricultural practices, a

large percentage of the occupant's subsistence was derived from fishing and the hunting of a few mammals, principally deer, beaver and black bear. Birds were taken in limited numbers and many of the species represented may have been of greater significance for use in the manufacture of tools and ornaments than for food. Turtles were eaten, and in several instances the carapace was used as a bowl or dish. Bone and/or antler were used in the manufacture of harpoon and projectile points, tubes, beads, awls, other tools and

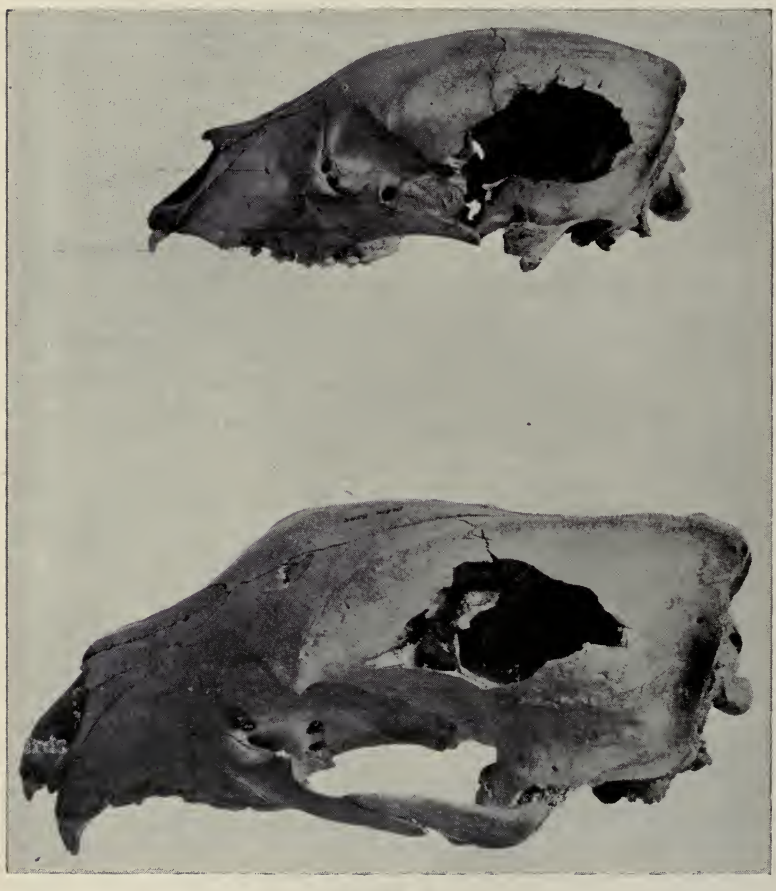

PLATE I

Two black bear skulls from the Bell Site, showing deliberate breaking of the left parietal region to facilitate removal of brains. Photo courtesy of Illinois State Museum.

utensils. The black bear was an important food animal and the basis of ceremonial rituals. Certain dogs appeared to have been revered while others were used for food. Mollusks were of little or no value and, like many of the vertebrate species whose remains occurred in limited numbers, served as an occasional supplement to the basic meat diet of deer, beaver, bear and fish.

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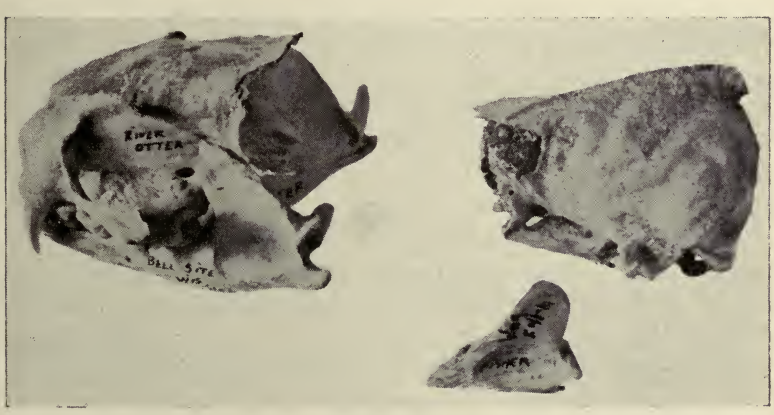

PLATE II

Otter (left) and fisher (right) skulls from the Bell Site: these probably served as part of medicine bags. Photo courtesy of Illinois State Museum.

PLANT MATERIALS FROM THE BELL SITE, Wn9, WISCONSIN

Leonard W. Blake and Hugh C. Cutler

Museum of Useful Plants, Missouri Botanical Garden

Most of the plant remains from this site were preserved because they were charred or carbonized but several fragments of a textile were saved by the preservative properties of copper salts.

All three cob fragments were from eight-rowed ears. One cob was medium-thick, the other two were small. The ears were similar to Northern Flints grown in recent years by Indians of central Wisconsin and surrounding states and described and illustrated in Huron Smith's **Ethnobotany of the Meskwaki Indians** (1928) and in Brown and Anderson's **The Northern Flint Corns** (1947). The name Northern Flints is ambiguous for even though the best known varieties are flints many flour and sweet varieties, including the original Golden Bantam belong to this race. The Indians of Wisconsin grew white, yellow, blue, red and calico flour, flint and sweet corn, as well as at least one kind of pop-corn. The carbonized fragments from the Bell Site are similar to many collections from sites in Illinois and Missouri dated from 1700 to 1830 and reported by Blake and Dean (1959).

The two squash peduncles (fruit stems) are small and probably came from varieties like Summer Crookneck, White Bush Scallop, or the small pumpkin variety called Mandan. All of these belong to **Cucurbita pepo,** the only squash grown in northern United States in prehistoric and colonial times. Smith (1933) reported that the Potawatomi cultivated several kinds of pumpkins and squashes and cites Captain Jonathan Carver who had seen varieties similar to those mentioned above.

The fibers in the textile fragment were identified as bast or soft fibers. It is likely that they are linen because the brass or copper wrappings of the threads are so fine that it is unlikely they could have been fabricated by the Indians. The fibers which tied the cattails of the mat are also bast fibers and appear to be basswood. Volney Jones has described the preparation of basswood fiber (1937) and Kinietz and Jones (1942) have described the manufacture of rush mats among the Chippewa.

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List of Plant Materials from Bell Site, Wn9, Wisconsin

CORN, **Zea Mays**
F64-21 Fragment of carbonized cob, 8 rows of grains, kernel thickness 3.4 mm., cupule width 6.4 mm.
F63-1 Fragment of carbonized cob, 8 rows of grains, kernel thickness 3.4 mm., cupule width 11 mm.
Surface, in waste dirt of Ostberg's diggings, carbonized cob fragment with 8 rows of grains, kernel thickness 3.1 mm., cupule width 6.2 mm.

SQUASH, **Cucurbita pepo**
F67-1 Carbonized peduncle (fruit stem) 15 x 10 mm. in diameter at point of attachment.
F94-1 Carbonized peduncle (fruit stem) 13.5x15 mm. in diameter at point of attachment. Both peduncles probably from small varieties like Summer Crookneck, White Bush Scallop, or Mandan.

FIBERS, probably **Linum**
F14-1 3 small pieces of fabric, fine metal (copper or brass) wound around warp. Weft 2 over and 2 under. Probably of European origin.
F85-14 Fibres from inside brass bangle (tinkler) ornament, animal tissues.

WILD PLUM, **Prunus americana**
F46-2 Two charred seeds.

MATTING, **Typha latifolia**, or **Scirpus** sp. with **Tilia americana**
F84-1 2 pieces of carbonized matting bound with twined weft of bast fiber which appears to be basswood inner bark.

BARK FRAGMENTS, **Betula** sp.
F46-1, F94-7, F64-22 Charred fragments of birchbark.

SKELETAL MATERIAL FROM THE BELL SITE, Wn9, WISCONSIN

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The skeletal material recovered from the Bell site was found to represent a single individual, a middle-aged adult female. Several bones were damaged, but only the sternum, right hamate, left lunate, and coccygeal vertebrae were completely lacking. The material was extremely friable and it became necessary to harden it with alvar although the ribs and some fragments of cancellous bone were left untreated for possible chemical analysis. A sample of the soil in which the skeleton was found has also been retained for possible analysis.

The skeleton was ascertained to be that of a female on the basis of wide, shallow sciatic notches, the presence of well-defined pre-auricular sulci, the rectangular appearance of the right pubic element (the left being damaged), and a skull with moderately small mastoid processes and poorly defined areas of muscle attachment. This decision was substantiated by the appearance of other bones in the skeleton. Appraisal of the symphyseal face of the right pubic element, using the component method of McKern and Stewart (1957), yielded an age estimate of 30 + years. This fact was also found to fit best into Phase VII or VIII of Todd's (1920) system, corresponding to an age of 35-40 years. Estimates derived from the degree of endocranial suture closure (Todd and Lyon, 1924) also indicate an age in excess of 30 years.

The skull is in generally good condition and shows only the slightest indication of possible warping. Some destruction has occurred to the basi-occipital, anterior intermaxillary, and right zygomatic arch regions, however, and cracks are present in the frontal, right zygomatic, and right maxillary bones. All damage appears to be postmortem and due to natural causes, and the measurements have been adjusted to take it into consideration.

There are no indications that the skull had been artificially deformed or that any part of the skeleton had been intentionally altered. The vault shows pronounced frontal and parietal bossing, giving it a pentagonal shape when viewed from above. Obelionic foramina are absent and inter-sutural

bones are limited to the right lambdoid (2) and masto-occipital (1) sutures. There are indications that this individual was markedly prognathic although the maxillary region has been badly damaged. The nasal profile is convaco-convex and the nasal bones are fused medially along the superior two-thirds of their length. The zygomatic bones are small and gracile, and they are markedly inverted at their inferior margins. The orbits are rectangular, have sharp superior margins, and are associated with small supraorbital notches (2 per orbit) and foramina (1 per orbit). The external auditory meatus is oval, the tympanic plate is thin with small dehiscences present bilaterally, and auditory exotoses are absent. Pterion is of the "K" type, and the palate does not contain a torus.

The following cranial measurements could be obtained with a reasonable degree of accuracy:

Glabello-occipital length		184	mm.
Maximum breadth		141	
Minimum frontal breadth		93	
Nasal height		42	
Orbital height	r. 30	l. 30	
Orbital breadth	r. 38	l. 38	
Biorbital breadth		96	
Frontal subtense		28	
Auricular height		119	

Estimated only to the nearest 5 mm. because of damage are the following:

Basion-bregma height	135	mm.
Bizygomatic diameter	130	
Total facial height	110	
Upper facial height	60	
Alveolar breadth	55	
Alveolar length	50	

The cranial index is 76.6, placing the skull in the mesocranic or mid-range. The nasal breadth is large in relation to the height, giving an index of 59.5 (platyrrhine), and the orbits are low with an index of 78.9 (chamaeconch).

The mandible is small and light in construction with a medio-bilaterial chin, multiple mandibular foramina on the left

side, and prominent genial tubercles. Mylo-hyoid arches and mandibular tori are absent. The rami form an angle of 125° with the body of the mandible, and the latter is cracked (apparently through natural weathering) at the position of the left first molar. The following measurements were obtained from the mandible:

Condylo-symphyseal length	107
Bicondylar width	121
Bigonial width	94
Minimum breadth of ramus	35
Condylar height of ramus	48

Many of the teeth had been lost prior to death, particularly the molars and premolars, and their sockets have been resorbed. The teeth that remain show considerable wear along with caries and abcesses, and the molars have begun to migrate forward. The left mandibular fossa and the left condyle of the mandible show erosion and rarefaction, probably due to malocclusion resulting from the extensive dental pathology.

The infracranial skeleton was recovered in relatively good condition as damage was confined primarily to the pelvic region. The scapulae are small, have concave vertebral borders, lack suprascapular notches and indicate weak development of the Teres major. The right humerus is longer and slightly more developed than the left, probably reflecting greater usage of the right hand, and both humeri lack septal apertures. The left radius shows a healed fracture with posterior displacement of the distal fragment (Colles' fracture). It resulted in greater than normal pressure on the distal radio-ulnar joint and extension of these articular surfaces. Unfortunately the associated lunate was not recovered, but the other seven metacarpals appear normal. No unusual variations of the vertebral column were noted other than the unusually small right transverse foramina in the fifth and sixth cervical vertebrae. This suggests that the right vertebral artery did not pass through these foramina as it usually does. The vertebral column also shows signs of osteoarthritis, particularly on the opposing body surfaces of C-5/ and C-6/7, on most of the apophyseal joint surfaces in the thoracic region, and on

the superior and inferior margins of the lower lumbar spinous processes. Some lipping is evident in the mid-cervical, mid-thoracic, and upper lumbar regions. The femora are markedly asymmetrical with the left having a thicker midshaft (left robusticity index = 13.5, right = 12.2), a smaller head, and greater development of a third trochanter. The greatest difference, however, is in the degree of torsion; that of the left femur is approximately 10°, that of the right is 45°. The anterior talocalcaneal facets are absent from the talus and calcaneum of both feet. The bones of the feet also show evidence of moderate to severe arthritis of the right posterior talocalcaneal joint and the left first tarsometatarsal joint and signs of lesser involvement at other joints.

The following infracranial measurements were obtained:

Humerus — maximum length	r. 312	l. 302
maximum head diameter	r. 42	l. 41
minimum head diameter	r. 38	l. 38
maximum midshaft diameter	r. 21	l. 20
Radius — maximum length	r. 237	l. ....
Ulna — maximum length	r. 249	l. 249
Femur — maximum length	r. 425	l. 419
bicondylar length	r. 421	l. 419
maximum head diameter	r. 45	l. 43
subtrochanteric a-p diameter	r. 25	l. 25
subtrochanteric m-l diameter	r. 34	l. 35
midshaft a-p diameter	r. 26	l. 28
midshaft m-l diameter	r. 26	l. 29
Tibia — maximum length	r. 364	l. 363
nutrient a-p diameter	r. 36	l. 34
nutrient m-l diameter	r. 23	l. 21
Fibula — maximum length	r. 348	l. 347

From these measurements the following indices were obtained:

Platymeric	r. 73.5	l. 71.4
Pilasteric	r. 100.0	l. 96.6
Platycnemic	r. 63.9	l. 61.8
Humero-radial	r. 76.0	l. .....
Humero-femoral	r. 73.4	l. 71.4
Tibio-radial	r. 65.1	l. .....

The stature of this individual, as estimated from the maximum lengths of the long bones, is approximately 164 cm., or 5 feet, 4½ inches (Trotter and Gleser, 1958). Although the tables used in making this estimate are based on male material, they are considered to be reasonably accurate for females also.

From the above information, the individual represented by the Bell site skeleton may be reconstructed as follows. It was a woman of moderate height and rather slight build who died of unknown causes, during middle adulthood. She had broken her left wrist, and, although the fracture had healed without impairing mobility of the left hand, it left her with a slight deformity. She appears to have preferred using her right hand, but whether this was true before the fracture or as a result of it is unknown. Movement of her back, jaw, and left wrist may have caused pain due to arthritis in these regions. Pain in both feet must have been more severe, and this, along with the marked asymmetry of her femora, may have affected her gait and caused a limp. It is evident that the poor condition of her teeth was also a source of considerable pain.

It would be foolish to attempt a reconstruction of an entire isolate on the basis of a single skeleton, but taking into consideration what is known about American Indians, particularly those of Wisconsin, one remark would appear to be in order. There are indications that the Bell site individual lies outside the usual range of variation for Indian groups and that she may have been of mixed ancestry (Indian plus White or Negro). Although her archeological context and general appearance may be Indian, certain features such as the width of the nasal root and aperture, the pronounced frontal bossing, the prognathism, etc., indicate possible non-Indian admixture. Until more Bell site skeltons are uncovered, or until more becomes known about the skeletal morphology of Wisconsin Indians, it will be impossible to determine with certainty whether this skeleton represents a pure Indian of rather extreme features, or an individual of mixed ancestry.

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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Dr. Marshall McKusick, the editor of the **Journal of the Iowa Archeological Society** who also serves as State Archeologist and teaches at the State University of Iowa, has been providing the members of the Iowa Society with what amounts to a memoir series over the past few years. Individual number of their quarterly journal have been largely devoted to the publication of a series of these written for the Master's degree at the State University at Iowa City under the supervision of Dr. Reynold J. Ruppe. Dr. McKusick, who succeeded Dr. Ruppe both as Editor and in the position at Iowa City, very properly thought the materials deserved wider circulation and use than they would receive as unpublished theses. He has editorially commented that it was his feeling that unless they were published, the situation would certainly lead to unnecessary and wasteful archaeological excavation, duplicating or overlapping earlier research rather than building upon it. His energy and fore-

sight in making these materials available is of very considerable benefit to Wisconsin archeology and the region as a whole as well as to the specific understanding of Iowa prehistory. Clearly, materials incorporated in recent numbers of the Iowa journal deserve detailed consideration in this section. For the present, however, we shall discuss in more extended form the most recent of these longer reports and simply list some of the other theses published for the immediate information of our readers.

The series of theses was initiated by the publication of "A Re-Examination of Mill Creek Ceramics: The Robinson Technique" by Richard E. Flanders (Vol. 10, No. 2, Nov. 1960, 35 pp.). The Robinson technique is a statistical procedure for obtaining a chronological ordering of sites and was here applied to the pottery of the Mill Creek culture in northwestern Iowa. The publication of this report was followed by one written by Adrian D. Anderson, "The Glenwood Sequence: A Local Sequence for a Series of Archeological Manifestations in Mills County, Iowa" (Vol. 10, No. 3, Jan. 1961, 101 pp.). Anderson's report describes in detail the artifact content and archaeological features of a series of sites belonging to the Glenwood culture of southwestern Iowa. Dale R. Henning in "Oneota Ceramics in Iowa" (Vol. 11, No. 2, Oct. 1961, 64 pp.) presents a technical analysis of Oneota pottery types and discussion of their broader relationships. John Chester Ives, "Mill Creek Pottery" (Vol. 11, No. 3, March 1962, 59 pp.) is also on Mill Creek ceramics, the topic examined by Flanders. While Ives' study is an earlier one, originally written in 1956, it is an essential source for the basic type descriptions of the ceramics. Finally, Eugene Fugle in "Mill Creek Culture and Technology" (Vol. 11, No. 4, April 1962, 126 pp.) provides us with a thorough description of the nonceramic remains of this same interesting cultural group. It should be noted that the above inventory of the contents of the **Journal of the Iowa Archeological Society** omits the numbers that contain shorter articles of a more conventional journal character. If the simple enumeration convinces you that you are missing important archaeological information,

as I trust it will, membership in the Iowa Society only costs $2.00 per year and the dues should be sent to the Secretary-Treasurer, Mrs. Phil Thornton, 326 Otsego Street, Storm Lake, Iowa. I suspect the Iowa Society is not making a profit on its membership dues.

* * * * *

Indian Mounds of Northeast Iowa as Soil Genesis Benchmarks by Roger B. Parsons. Journal of the Iowa Archeological Society, Volume 12, No. 2, pp. 1-70. October 1962.

This number of the Iowa quarterly also deviates from conventional journal format in being confined to a single, substanial report. The study was submitted as a doctoral dissertation in 1960 at Iowa State University, Ames, and has a principal objective the determination of the degree of soil horizon development in parent soil materials of known age. This reviewer is not technically competent to either summarize or evaluate the study as a contribution to soil science but is here concerned with its archaeological implications.

The soil scientist is normally handicapped in his investigations of the processes of soil formation, particularly so far as an analysis of the rate of development is concerned, by the difficulty of controlling the time factor. In the approach used by Dr. Parsons, seven soil profiles derived from the excavation of a series of Indian mounds located at Effigy Mounds National Monument in northeastern Iowa as well as control profiles near the mounds were studied. The time of construction of these mounds is reasonably known from archaeological work in this region and, indeed, there are several radiocarbon dates from sites on the Monument itself. Thus the mound-building activities of the prehistoric Indians provide a deposit of soil of known age in which the processes of horizon differentiation can be studied. What is of obvious interest to the student of prehistory is the fact that if differential degrees of soil horizon development are found in the mounds, a mean is provided whereby the mounds can be arranged in the chronological order in which they were constructed. Other inferences of interest to the prehistorian can also be drawn. The particular kind of soil horizon reflects, in large part, the kind of vegetation that existed while

it was being formed. Thus information is provided through soil analysis on this aspect of the environmental conditions in which the Indians lived.

We learn from the study that the soil profiles developed are comparable to those which form under deciduous forest vegetation. Dr. Parsons is also of the opinion that for the horizons observed to have formed, the mounds must have become stabilized by vegetation shortly after their construction. The Indians doubtless cleared underbrush, rather than mature trees of the native oak-hickory forests which are fairly open and not overly dense, in order to prepare the ground for mound construction. He infers that under these conditions, the vegetational cover of the mounds would quickly become established and that the canopy of leaves above the mounds would have broken the force of raindrops and limited their power to erode the surface of the mounds through the runoff water. Confirmation of this interpretation was gained through studying soil profiles immediately adjacent to the mounds. Had there been extensive surface erosion from the tops of the mounds, he reasons that the topsoil depths in areas adjacent to the mounds would be thicker than normal. In actual fact, these were less than normal which is seen as being due to the fact that the Indians scraped up topsoil in order to construct the mounds rather than digging deeper pits in limited areas to obtain subsoil for the mound fill. We learn from this, then, that the rather low and inconspicuous mounds of Effigy Mounds National Monument which, in the seven mounds sampled in this survey, ranged in depth of mound fill from 21 inches in a conical mound to 36 inches in a bear effigy, approximate the heights of the original constructions and are not the remnants of structures of formerly more impressive dimensions. In addition to demonstrating that the mounds were constructed by utilizing topsoil scraped from a broad area, the study substantiates with precise techniques an observation frequently made in relation to other mounds of the Effigy Mound culture. That is, the topsoil had been removed from a section at the base of the mound prior to mound construction.

The soil analyses made it possible for Dr. Parsons to arrange the mounds investigated in chronological order, the

grouping from earliest to youngest being: (1) bear effigy No. 73, (2) conical mounds No. 12 and No. 7, (3) linear mound No. 14, (4) conical mound (on adjacent farm) and bear effigy No. 13, (5) conical mounds No. 2 and No. 3, and (6) bear effigy No. 81. He concluded that the age differences between any two mounds adjacent to the above grouping may be "slight" but that "considerable" differences exist between the soil characteristics of mound No. 81 and mound No. 73. It is unfortunate that no independent measures of the time involved in this span are available other than what is known as to the time span of the Effigy Mound culture, both as a check on the reliability of the seriational analysis and as a means of using these "slight" and "considerable" differences as an estimate of the time involved in other mound constructions under similar conditions. However the indication that such a group of mounds is constructed over a considerable span of time is valuable information in itself.

* * * * *

It would seem that the broader utility of this study might have been enhanced had the project been carried out with fuller cooperation between the soil scientist and the archaeologist. Excavations in the mounds were limited to trenches three feet in width and they were focussed upon areas where it was not likely that burials and other artifacts might be encountered. Thus it is stated that few artifacts were recovered and features were limited to a cremation found in conical mound No. 12 and a "stone crypt" in conical mound No. 2. Presumbably these features will be described in detail elsewhere. Although the intent of conducting such limited excavations was presumably to preserve the appearance of the mounds since they are in a public park, the entire study would have been strengthened by the acquisition of more extensive cultural data that might have permitted seriation of the mounds in cultural grounds or alternatively provided samples for radiocarbon analysis that might well have given a precise expression of the span of years involved in the soil formation processes. Further, Dr. Parsons would seem to have taken as a point of departure in his interpretations a position which essentially saw conical mounds as being Hopewellian in cultural affiliation, or representing a time of transi-

tion to the effigy and linear mounds of the Effigy Mound culture. Such a position is, of course, an oversimplification since conical mounds persist in considerable numbers even into the historic period. This point, however, in no way effects the basic seriation of the mounds that has been accomplished on the basis of soil profiles in which a bear effigy is both the oldest and the youngest in the group. It may be mentioned as an aid in reading the report that pages 19 and 20 have been transposed.

As was indicated above, it is to be regretted that we do not have further information on the variation in cultural traits within the span of mound construction at Effigy Mounds National Monument or additional radiocarbon dates to establish the actual duration. However, the mounds are still available for further investigation and we may hope that the information will some day be secured. But though we may as archaeologists express our desire for further information of a cultural character, the importance of Dr. Parson's study in illustrating the contributions to be made through meticulous soil studies should not be slighted. His conclusion that the A^1 soil horizon develops in 1,000 years or less is important information for the archaeologist. It is essential, for example, that in the excavation of deep midden deposits careful inspection be made to see if soil horizons have developed at various points in the midden. Such a situation, of course, suggests cessation in midden accumulation and probable discontinuous occupation. We are now approaching a time when we might be able to estimate the time involved in such discontinuities of occupation or perhaps in stages of mound construction.

David A. Baerreis
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* * * * *

The Navaho, revised edition, by Clyde Kluckhohn and Dorothea Leighton. Doubleday Anchor Book, Natural History Library No. 28, New York, 1962. $1.45.

The Navaho is one of the many publications by the late Clyde Kluckhohn concerned with the largest Indian tribe in the United States. One of the foremost anthropologists of his

time, Dr. Kluckhohn's great breadth of interest and range of contributions spanned the field. From the beginning of his career until his death in 1960, a period of more than 37 years, he maintained close contact with the Navaho Indians, whose language he spoke fluently, and who were both his delight and his challenge. His first book, **To the Foot of the Rainbow,** an account of a pack trip through Navaho country, was published in 1927, the year before he received his A. B. degree from the University of Wisconsin. Among his other writings on the Navaho are **Navaho Witchcraft, Children of the People** (with Dorothea Leighton), **An Introduction to Navaho Chant Practice** (with Leland Wyman), etc. The present book, **The Navaho**, written in collaboration with Dorothea Leighton, a psychiatrist long acquainted with the Navaho, is an old familiar on the bookshelves of most anthropologists and an unquestionable landmark in anthropological writings.

When it was first published in 1946, its appeal was timely. Steady population increase, dwindling land resources, and reluctance to abandon traditional ways had combined in creating what Kluckhohn and Leighton considered to be "the foremost Indian problem." In attempting to cope with the situation, a sympathetic and prolonged government assistance program had fallen disappointingly short of success. In **The Navaho,** the authors sought to determine where the program had fallen short. Their central hypothesis in the book was that the relative ineffectiveness of the program had resulted from a failure to understand certain cultural factors. In developing their thesis, they presented a careful analysis of the economic basis of the problem, as well as a comprehensive description of Navaho culture, which remains today as the best single treatment of the subject. In its sober handling of the hard facts of life on the Navaho reservation and its perceptive treatment of Navaho culture — religion, values, language, and so on, as a meaningful, coherent whole, it has a remarkable unity as well as a quality that is timeless.

The new edition has been revised by Richard Kluckhohn and Lucy Wales, and contains an introduction by Stanley Freed. The revisions are largely concentrated in two chap-

ters: **Land and Livelihood** and **The People and the World Around Them.** In the main, the revisions consist of rephrasings of "dated" expressions, and substitution and/or additions of current statistics. For example, the authors were careful to point out in the original edition that "the book was written in the years 1942-44. Unless a specific year is mentioned, 'now' or 'today' refers to the 1942-1944 period." In the revised edition, some of these words or phrases have been changed, and some have not. In a reference to Hill, 1943 (p. 97) "recently" has been deleted, but maintained in reference to Reichard, 1944 (p. 193) and Wyman, 1945 (p. 195).While this particular type of inconsistency is of little consequence, it reflects the wholly arbitrary nature of the revision. On page 23, the current estimate of Navaho population of 90,000 has been substituted for the 55,000 estimated for the Navaho in the mid-1940's, but on page 167 the figure of 85,000 has been substituted for 55,000, without qualification. In 1946, when the Navaho population was 55,000 and 58.4% of their income was derived from stockraising and agriculture, it was estimated that "if even 5,500 irrigated acres could be added to the lands now farmed, the people could produce all the unprocessed agricultural products which they now purchase." Today, with a population of 90,000 and stockraising and agriculture accounting for only 9.9% of income, the statement is left (p. 81), while elsewhere (p. 57) it is pointed out that in fact "many new areas are being irrigated." Here, as in other instances, the data have been altered without corresponding adjustments in conclusions. While many conclusions of the first edition may still apply to the Navaho situation today, the temporal confusion between facts and conclusions in the revised edition seriously undermines the validity of the analysis of the economic basis of the problem, so clearly presented in the original edition.

The new material which is included in the revised edition is certainly of interest (e. g. on school enrollment, sources of income, land claims, etc.), but in this reviewer's opinion, it would have made more sense to have placed these new data in a separate chapter or appendix. On the whole, however, insofar as there has been little to no alteration in other chap-

ters, and some changes have been relatively skilfully introduced, the revised edition of The Navaho still has much to offer the general reader.

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THE HI-LO SITE
A LATE PALEO-INDIAN SITE IN WESTERN MICHIGAN

James E. Fitting

In a recent article, Ronald Mason has suggested that the regional expressions of the late fluted point and early Plano complexes be referred to as "Late" Paleo-Indian (Mason 1962: 233). This term covers artifact assemblages with overlapping characteristics of both fluted point and Plano traditions. Quimby, for this period, which he calls "Aqua-Plano," gives only four sites in the Great Lakes area. (Quimby 1960: 37). The Hi-Lo Site may be placed in this period and, although represented by only a surface collection, contributes some information about the Late Paleo-Indian occupation in the Michigan area.

The Hi-Lo Site was discovered by Mr. Buerl Guernsey of Gowen, Michigan. The writer learned of his collection from Mr. Richard Peske and Mr. Henry Wright who were making a site survey in Montcalm and Ionia counties in the spring of 1962. In the fall of 1962, Mr. Guernsey loaned his collection to the writer for further study. Mr. Guernsey not only allowed the study of his collection from the Hi-Lo Site and Kent Race Track, but also obtained permission for the writer to see the Steffanson collection. Aid was also received from Mr. George Davis of Grand Rapids, Michigan, who allowed us to photograph and draw part of his collections from Ionia, Kent and Muskegon Counties; Mr. Edward Gillis of Grand Rapids who pointed out related projectile point forms in the collection of Mrs. Orton Sies; and Mr. George Stueber of the University of Michigan Museum of Anthropology who did the photographic work for this paper. Without the assistance of these individuals this study would have never

been made. [1]

The Hi-Lo Site (20 IA 45) is located on the property of the Hi-Lo Gun Club in Ionia County, in the south west quarter of the northwest quarter of Section 19 of Keene Township. It is on a high terrace of the Flat River on the south side of Fallasburg Road about one mile east of Fallasburg. Here there is an area devoid of vegetation about 75 yards long and 50 yards wide on the top of a knoll with an elevation of 810 feet above sea level. The surrounding area is deciduous forest and meadow. The "blow out" area of the site is apparently a sand mantle in an area of Lake Border (Late Cary) Morains.

The artifacts from this site fall into two major groups. The first of these groups is the larger and contains the late Paleo-Indian material. Artifacts were placed in this group because of similarities of style, material and technique of manufacture. All concave base lanceolate projectile points and point fragments were grouped together; then all scrapers and knives of the same material and workmanship were placed in this group. The second group is a residual category containing all the artifacts differing from the main group and from each other. This second group is smaller and in only two instances do we find material or stylistic duplication.

Sixteen projectile points and bases are in the first group. They have a number of common attributes: they are generally lanceolate in outline; they have concave bases; all exhibit basal modification from thinning to fluting; and all but one exhibit heavy lateral grinding. These attributes are all typical of late Paleo-Indian material. It is necessary, however, to make further sub-division of this group of points and bases into three sub-groupings. The metric data and chert description for each of these types is given in Table I.

Type I consists of eight point bases. These are lanceolate in form with straight to slightly convex sides and a concave base. They all exhibit lateral grinding and are all basally modified, some to the extent of having flakes removed along

[1] I would like to thank Dr. Olaf Prufer, Dr. Arthur Jelinek and Dr. Richard Keslin for reading and commenting on this paper. The author assumes full responsibility for the interpretation of the data which are presented here.

PLATE 1: Artifacts of the Late Paleo-Indian component at the Hi-Lo Site. See text for explanation.

the entire length of the basal fragment (Plate 1, A-H). There were no complete points of this class from the Hi-Lo Site; but judging from a number of complete points with almost identical bases from the collections of several individuals and the University of Michigan, Museum of Anthropology, they were probably between 4.9 cm and 7.0 cm with a clustering around 6.0 cm.

Type II consists of two points (one complete) which are triangular in outline. They both have the concave bases, basal modification and lateral grinding of type I points but differ from this group in their constant contraction from the base to the tip (Plate 1, I, J).

Type III consists of six points. These are smaller than the other points and have convex to almost pentagonal sides. They have concave bases and are basally thinned; all but one are laterally ground (Plate 1, K-P).

These types are, to a certain extent, arbitrary. It would be possible to set up several other sub-categories: shallow and deep basal concavities of type I points; or convex and pentagonal outlines on type III points, etc. On the other hand, there are intergradations and type II and type III could be grouped. Several of the type II and III points are reworked and could be reworked type I points. This would leave us with only one type and a reworked variant. With the small size of the present sample, these classifications should be kept free to shift within the metric and typological range of the Hi-Lo projectile point forms.

On the basis of similar workmanship or material or both, a number of other artifacts from the general collection have been assigned to this complex. Most obvious are two worked pieces which appear to be basal corners of type I points made of similar material to the point bases in this group. One is .45 cm thick and the other is .65 cm thick.

There were three knife fragments exhibiting rounded tips (Plate 1, R-T). They are of dark grey to light grey widely banded chert, a material similar to the majority of the projectile points. They may be tips of type I projectile points which would then be knives but there is evidence against this which will be presented below. They vary in thickness from .4 cm to 1.1 cm.

Measurements in cm.

Site or Collection	Class	Width at Base	Maximum Width	Thickness at Base	Maximum Thickness	Blade Length	Total Length	Depth of Base	Material	Remarks
Hi-Lo Site (Guernsey Collection)	I	2.5	2.5	.6	.7	?	?	.3	Lt. Grey Chert	Deep lateral Grinding
		2.6	2.9	.6	.8	?	?	.4	Lt. Grey-Brown Chert	
		3.0	3.4	.6	.8	?	?	.35	Lt. Grey-Cortex	Heavy lateral Grinding
		2.9	2.8	.45	.65	?	?	.4	Lt. Grey banded	Ears
		2.5	2.7	.5	.65	?	?	(.25)	Dark Grey-White Bands	Ears are Broken
		2.9	2.9	.55	.65	?	?	.35	Grey-Brown banded	
		3.2	3.5	.6	.8	?	?	.9	Lt. Grey banded	Heavy Grinding
		2.3	2.4	.4	.6	?	?	.25	Blue-Grey reddish	Heavy Grinding
	II	2.8	2.8	.5	.9	3.7	4.0	.3	Lt. Grey Chert	
		2.9	2.9	.4	.8	?	?	.4	Grey Chert Cortex	
	III	2.1	2.45	.6	.8	3.2	3.4	.2	Fine Dark Grey Chert	
		2.7	2.75	.5	.8	3.1	3.4	.3	Lt. Grey-Red Chert	Grinding very deep
		2.25	2.5	.4	.7	2.8	3.3	.5	Lt. Grey Chert	No lateral Grinding
		2.4	2.6	.4	.7	3.3	3.6	.3	Banded Red-Grey	Deep Grinding
		2.1	2.4	.4	.6	?	?	.25	Red-White Chert	Weathered
		1.7	2.0	.35	.55	2.6	2.8	.2	Red-White Chert	

Two scrapers from the collections may belong to this complex. One is a primary flake with a sharp retouch which may have served as a scraper or graver. The other is a stemmed end scraper (Plate 1, U).

The final artifact placed with this complex is a bifacially worked ovate similar to some of the George Lake material (Greenman, personal communication) (Plate 1, Q).

The other artifacts which have been separated from the Hi-Lo Late Paleo-Indian complex consist of eight point fragments and two scrapers which show both material and typological separation from the artifacts described below.

Two objects are made of a closely banded grey-purple East Port chert. They are a finely serrated point tip (Plate 2 A) with a maximum thickness of .45 cm and a small bifacially worked ovate which is probably a scraper (Plate 2 B).

Three point fragments, two tips (Plate 2 C, D) and one either side notched or expanding base form with a broken base (Plate 2 E) are made of a greyish white chert with orange mottling and exhibit similar workmanship.

There was one side notched end scraper of medium gray chert and four other points and point fragments. One of these has a concave base with the sides expanding from the

PLATE 2: Artifacts from later occupations of the Hi-Lo site. See text for explanation.

base. The material is a very fine white chert and parallel flaking is evident. The lateral edges are ground and on one face a flake has been removed downward toward the base (Plate 2 F). One expanding base or "Ace of Spades" point was in this collection (Plate 2 G). The material is a grey-purple mottled chert of medium quality. A similar form was found in a level at the Bar Site near Nunica, Michigan, which is stratigraphically below a Middle Woodland occupation (Peske 1962:119 and personal communication). There was a small stemmed projectile point of poor grey chert and cortex which may have been reworked (Plate 2 H) and a small triangular point of white chert (Plate 2 I). The second form is commonly associated with Late Woodland and Mississippi sites.

A number of points similar to those of the Late Paleo-Indian component from this site are in the University of Michigan, Museum of Anthropology collections and in the collections of several individuals. Some of these points are illustrated on Plate 3 along with the drawing of some points from the Hi-Lo Site. One additional type was added designated IIIa, which was similar to type III but larger. Several of the IIIa projectile points are shown in Plate 3 (F, G).

Two things were noted in this additional material. One was the distribution, with 30 of the 50 points of the sample coming from Montcalm, Ionia and Kent counties. This, however, might be due to sampling error.

These additional forms also demonstrated that type I points are points and not knives. A number of complete points with almost identical bases to those from the Hi-Lo site were found in other collections.

A number of similar forms are illustrated or described in other publications. Type I forms are illustrated by Quimby (Quimby 1960: 36) who calls them "Aqua-Plano"; Mason (Mason 1958: Plate IVa) who calls them "fluted-like or quasi-fluted" and they are described by Prufer and Baby who call them "unfluted fluted" points (Prufer and Baby n. d.; 25).

A point similar to type II is illustrated by Ritchie from the Reagen Site in Vermont (Ritchie 1953: Figure 89:32) and

PLATE 3: Projectile points from the Hi-Lo site and similar forms from other areas in Michigan. A. Type I, University of Michigan, Museum of Anthropology, catalogue number 1301, Hillsdale County. B. Type I, UMMA cat. no. 1244, Ionia County. C. Type II, Hi-Lo site (same as Plate 1 J). D. Type III, Hi-Lo site (same as Plate 1 M). E. Type III, Hi-Lo site (same as Plate 1 O). F. Type IIIa, UMMA cat. no. 213, county unknown. G. Type IIIa, UMMA cat. no. 27736, Washtenaw County. H. Type III, UMMA cat. no. 1244, from Ionia County. I. Type III, Hi-Lo site (same as Plate 1 N). J. Type III, UMMA cat. no. 57151, Washtenaw County. K. Type III, Hi-Lo site (same as Plate 1 P). L. Type III, UMMA cat. no. 40014, Saginaw County.

called an "earred triangular."

A point from the Blanchard River area is like type III forms from the Hi-Lo Site (Johnson and Neill 1961, Figure 1a). Large numbers of this type as well as type I are found in Northwestern Ohio (Prufer: personal communication).

The scraper forms have analogies at the Reagen Site (Ritchie 1953: Figure 89: 39, 40, 41-43, 51-54, 61-63) and the Brohm site (MacNeish 1952: Plate IV; 2, 4). This type of scraper is found on later sites but the material is similar to that of the points in the Hi-Lo complex. The similarity of the Quartzite ovate to the forms from the George Lake Site has been noted.

All of this material has been placed between the high Lake Algonquin level, which is now estimated at 7,500 to 8,000 B. C. (Mason 1962: 236), and 6,000 B. C.

There are also a number of sites from this same time period which show a different type of artifact, one more finely made and more closely related to the ribbon flaking of the Plano tradition. The most striking of these are two sites associated with Lake Algonquin beaches, or Falling Lake Algonquin beaches; the Brohm Site (MacNeish 1952: 36) and the Holcombe Site (Roosa 1962: 265, Keslin, personal communication). At the Holcombe site both basally modified, thinned to fluted, and unmodified forms are represented.

Prufer and Baby suggest that "unfluted fluted" and Plano forms are never found on the same sites in Ohio (Prufer and Baby n. d.: 67-68). There seems to be a similar dichotomy in Michigan for the Hi-Lo forms with a center of distribution in Ionia, Kent and Montcalm counties, while the Holcombe forms have a center of distribution in Macomb County and there are similar forms from Tuscola, Newago and Muskegon counties.

We are either dealing with two contemporaneous traditions which are mutually exclusive or with very slight overlap, or must look for a further temporal arrangement within the Late Paleo-Indian period. Such an arrangement has been suggested for Ohio on the basis of the Hog Creek sites with the "unfluted fluted" forms preceding the Plano forms (Prufer and Baby, n. d.: 40, 68) but, at present, there is no basis

for a temporal separation of the Hi-Lo, Brohm and Holcombe forms in Michigan.

The Hi-Lo site represents a Late Paleo-Indian complex from Western Michigan. It has similarities to a number of other sites in the surrounding areas and is perhaps 8,000 to 10,000 years old. When comparing materials attributed to this period from other sites in the Great Lakes area, we find the suggestion of two districts, yet related traditions. Either they were coeval and mutally exclusive or there is a temporal separation. In either case much more work is needed before this period may be fully understood.

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EVIDENCE OF OLD COPPER CULTURE IN SOUTH DAKOTA

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Max. Length: 18 cms.
Max. Width: 2.57 cms.
Max. Thickness: .30 cms.

Possible evidence of the "Old Copper Culture" was found recently by Mr. Louie Heidebrink of Sioux Falls, South Dakota while digging a water main along the Big Sioux River, Sherman Park, Sioux Falls. He states that he noticed a piece of shiny metal embedded in the side of his excavation at a depth of about 10-12 feet. The shiny peace of metal turned out to be a very fine sample of crescent-shaped copper knife of a type commonly occurring in sites of the Old Copper Cultures in the Upper Great Lakes region. Nothing else was found with the knife to indicate the presence of an occupation zone.

The Indians of the Old Copper Culture were the first to use metal in the Americas. Radiocarbon dates from village sites in upper Michigan indicate that they had lived in that area 6000-7000 years ago.[1] These Indians fashioned most of their tools and weapons of copper mined in the Lake Superior area, and it is possible they wandered into the South Dakota area.

Description: Thin, crescent-shaped blade with approximately ⅔ of the outer edge sharpened. Very little oxidation has taken place and the cutting edge is still surprisingly keen. Ripples from hammering are evident over the surface of the specimen. (Robert Gant)

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[1] 1960, **Indian Life in the Upper Great Lakes**, George Irving Quimby, fig. 26, pp. 52-63. University of Chicago Press, Chicago 37, Illinois.

AN ANALYSIS OF CREMATIONS FROM THREE MICHIGAN SITES [1]

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One characteristic feature of Late Archaic burial customs in the Great Lakes Area was the occasional cremation of human remains for, or prior to, interment. Such practices constitute an interesting feature of these socio-cultural systems because they may vary in both structural and stylistic features across the area at different times. Several major patterns of variation could be isolated through the study of archaeologically recovered cremated bone: (a) cremation on individual or collective pyres, (b) cremation of complete or dismembered bodies, and (c) cremation of dry defleshed bones or bodies in the flesh. In addition to variations of this type, further differentiation may be exhibited in the treatment after burning and in the nature of the final distribution and disposal of the cremated remains. Differences may also be recognizable in the age and sex, as well as the associated items differentiating individuals afforded cremation, as opposed to other forms of mortuary treatment.

The investigation of several Late Archaic sites by the staff of the Museum of Anthropology, University of Michigan, has resulted in the recovery of a number of cremations for comparative study. This report is designed to present the results of preliminary investigations into the problem of the formal analysis of cremated bone. In addition, it will provide a limited set of observations concerning the crematory practices of the Late Archaic populations of Michigan represented by eight examples from three separate sites: the Andrews site (unreported) the Pomranky site (Binford, ND. a) and the Hogers site (Binford, ND b).

Unfortunately, the comparisons made between these are not all based on strictly comparable data since the investigations of crematory practices were conducted over a three year

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[1] I am deeply indebted to Charles Eyman of the University of Michigan for aid in sorting the cremations, identification of bone elements, and for sexing and aging the fragments amenable to such analysis. Mark L. Papworth, then of the Museum of Anthropology, was of great assistance in sorting and generally carrying out many of the tasks necessary to the analysis.

period. Cremations from each site were studied separately, and as our knowledge increased new approaches were added. Unfortunately, the materials analyzed earlier were not re-evaluated using more "up-to-date" methods. Nevertheless, it is worthwhile to make the results available to others as a basis for further comparison and refinement of analytic techniques.

Review of the published literature concerning crematory practices in the Eastern United States shows that Krogman (1939), Webb and Snow (1945), and Baby (1954) have conducted the major investigations. These researchers have disagreed on rather basic criteria for distinguishing cremations of dry defleshed bone from burned bodies. For instance, Webb and Snow report on the work of Krogman as follows:

> It appears that when bones in a dry condition are incinerated, besides being calcined, they show cracking or 'checking';. . . like the patina of age on an oil painting. However, if a body should be burned in the flesh, besides possibly showing an incomplete incineration of bone, it is often possible to see under power magnification the remains of incompletely consumed endosteum (Webb and Snow, 1945; 189).

Baby's later work on Hopewell cremations indicates that Krogman's observations were not fully correct. According to Baby:

> Krogman states that 'the people of the Hopewell culture practiced cremation mainly on defleshed and dried bones; though not to the exclusion of fleshed cremations'. This conclusion is based on the examination of a few completely incinerated fragments, which 'show burning in the flesh'.
>
> The last statement is correct, but the former is incorrect. The characteristic features of the incinerated fragments examined by Krogman are indentical with the residue of a recent test burning of a whole fleshed cadaver and of 'green bones' from the dissecting room. Burnt dry bones exhibit superficial checking, fine longitudinal fracturing or splintering, and no warping. None of the material examined in this study suggested the burning of dry bones (Baby, 1954; 5).

The disagreements between Baby and Krogman can be summed as follows: Krogman suggests that the presence of "checking" is indicative of dry bone cremation, while incompletely burned bone denotes flesh cremation. Baby challenges the hypothesis that "checking" or calcined bone necessarily signifies dry bone cremation.

Baby's experiments revealed that there are distinctive differences between flesh and dry bone cremations. Deep transverse splitting or "checking" is more characteristic of flesh cremations while superficial checking, "like patina of age on an oil painting," and deep longitudinal fractures characterize dry bone cremations. Warping predominates on bone which is cremated while the flesh adheres, but is absent from those bones burned in a dry state.

Before an analysis of the cremated material from the Michigan sites could be made, it was necessary to repeat Baby's experiments in order to confirm or refute them and to provide controlled comparative material obtained when the crematory techniques were known.

A burial approximately 1,500 years old, and recently macerated bone obtained from the Anatomy Department, University of Michigan, constituted the dry bone specimens for experimentation. The right humerus, two left fibula, left ischium, left third rib, and ninth thoracic vertebra from each source were cremated under the same condition, a very hot charcoal fire. It was reasoned that the way in which hot bone was cooled might affect its external appearance. Half of the specimens were allowed to cool naturally; the other half were doused with water and thus cooled abruptly. The effects of cremation on the macerated and archaeological bone were the same. The long bones exhibited superficial checking, fine longitudinal striae, deep longitudinal fracturing or splintering with no warping. The soft spongy bone (ischium, vertebrae, etc.) showed almost no checking, but small factures developed along the "longitudinal" axis of the bone. Water cooling caused the bone to break up, splitting along the heat-produced fractures and longitudinal striae, although there was no increase in the amount of checking. Bone which was allowed to cool naturally remained largely intact. In neither case was there any warping of the bone. The findings com-

pletely support Baby's observations.

Experiments with flesh and green bone were more difficult to duplicate. For this phase of the work we employed a partially dissected green monkey cadaver, since we could not obtain human specimens. The following anatomical parts of the monkey were cremated as units: the head (severed from the vertebral column at the axis), the left arm (severed from the trunk at the shoulder), and both the right and the left feet (severed from the legs at the ankle).

Like the dry specimens, these units were cremated in a charcoal fire and half were abruptly cooled by dousing with water. The skull of the monkey exhibited differential degrees of calcining. The fronto-orbital, maxillary, and masto-parietal regions were completely calcined. The fragile bones inside the orbits and in the nose were calcined so completely that the slightest pressure reduced them to small flakes and minute fragments. The region for the attachment of the internal pterygoid to the mandibles was incompletely calcined; part of this charred muscle adhered to the bone. The basilar and nuchal regions of the skull were incompletely calcined. Warping was marked in all regions, as was warping along cracks which developed in the bone during incineration. The effect of burning was similar on the long bones — deep longitudinal and transverse fracturing, with warping along the edges of the fractures. Transverse fractures tended to be curved and serrated in appearance, as opposed to the straight cracking observed on the cremated dry bones. This was not a presence-or-absence matter, but rather one of relative frequency. No curved cracks were observed on old dry bones, while both angular and curved checking was present on the fresh bone. Checking was superficial on the dry bone, but in most cases extended completely through the green bone. Warping was marked: in some cases the endosteum was identifiable on partially calcined fresh bone fragments. Rapid cooling had the same effect as on the dry bones — breaking along the fire-produced cracks.

It is concluded that the degree of bone calcining is a function of the length of time in the fire, the intensity of the heat, the thickness of the protecting muscle tissue, and the position of the bone in relation to the point of oxidation of the consum-

ing flame. In both experiments the findings support Baby's conclusions. Differences are observable between bone which was dry when burned as opposed to flesh cremation. Dry bone tends to show predominantly longitudinal fractures, an absence of warping, and superficial angular cracking; cremations of green bone or bone with the flesh attached show deep transverse fractures, frequently curved, much warping, and the occasional presence of endosteum.

These experiments provide the basic information necessary for examining the Late Archaic cremations with regard to determining whether dry defleshed bones or bodies were being cremated.

Baby's study of Hopewell cremations provides the model for the analysis of burned bone with an aim of determining whether or not bodies were dismembered prior to cremation. The analysis of anatomical parts as to their degree of burning was the methodology employed. Baby classified the material he examined as follows:

(1) **Completely incinerated.** Fragments range from light to blue-gray to buff and show deep "checking," diagonal transverse fracturing, and warping.

(2) **Incomplete incineration (smoked).** Fragments are blackened through the incomplete combustion of organic material present in the bone. Frequently, bits of charred periosteum are found adhering to the outer surface.

(3) **Non-incinerated or "normal bone."** These fragments were not affected by the heat, but show some smoking along the edges.

Using these attributes, Baby concluded that in Hopewell cremations bodies were dismembered before burning judging from the differential cremation of contiguous anatomical parts. The observed differential firing could not reasonably have been produced had the remains been articulated. Because Baby's study is the only one available as a guide to the analysis of cremated remains (with the question of dismembering discussed), his results will be mentioned here. Aside from the methodological guide, Baby's study also serves as a basis for comparison with the remains from the Michigan Sites.

Baby examined 128 Hopewell cremations. He found the facial region, external cranial vault, mandible, atlas and axis

vertebrae, ribs (rarely found), entire arm and hand, iliac blades, distal two thirds of the femur, almost all of the tibia, the fibula, and the feet were consistently calcined. The temporal squamosa were partly burned. The spines and transverse processes of the vertebrae ,except the first and second cervicals mentioned above), the greater trochanter, and the posterior part of the tibial promontory were smoked. The upper sacrum, vertebral centra, pubis, ischium, acetabulum, and proximal third of the femur were normal. There is no mention of the sternum, clavicle, scapula, or patella.

Baby opinioned that the variation in burning according to the particular anatomical region was due to partial dismemberment of the body prior to its cremation. He suggested that the head was severed from the neck, the legs severed at the knees, and that possibly the arms were severed at the shoulders. The small bundle which could be produced by such partial disarticulation seems necessary if the body was to be fitted into the small Hopewell crematory basins.

Eight clusters of cremated bone from three Michigan sites constitute the sample studied. Four cremations occurred as part of the "grave furniture" in the single excavated burial at the Pomranky site near Midland Michigan (Binford N. D. a). One discrete burial of cremated bone from the Andrews site near Saginaw, Michigan (Feature No. 3), as well as two other cremations which occurred as "burial furniture" in Feature No. 4 and the second burial excavated by Rodger Pfeiffer, a local amateur. The final sample was obtained from the single excavated burial at the Hogers site near Saginaw, Michigan (Binford N. D. b.).

Table number one presents the tabulated data for the Hopewell cremations studied by Baby and the eight cremations studied from the Michigan area, with regard to the degree of burning of the anatomical parts reported by Baby. Examination of this table reveals a striking difference between the cremations from the Michigan sites and the Hopewell sample.

The evidence pointed to by Baby as indicative of dismemberment prior to cremation is absent in the Michigan material. Another important difference between the Michigan cremations and the Hopewell data is the frequency with which

Anatomical Part	Hopewell	Pomranky				Andrews			Hogers
		#1	#2	$3	#4	#3	#4	#11	
1. Base of Skull	Complete	Incomplete	Not ident.	Incomplete	Complete	Incomplete	Incomplete	Not ident.	Not ident.
2. Upper parts of skull	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete
3. Vertebrae	1st & 2nd cervical complete other non-incinerated	Complete	Complete	Complete	Complete	Complete	Incomplete	Smoked	Incomplete
4. Upper Extremities	Complete	Complete except elbow	Complete	Complete except elbow	Complete	Complete except elbow	Complete except elbow		Incomplete
Ribs	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Incomplete	
Pelvic Area	Acetabulum and ishium non-incinerated, iliac blades complete	--	--	--	--	Complete	--	--	Smoked
Femur	Proximal 1/3 Incomplete distal 2/3 complete	--	--	Complete	--	Complete	--	--	Smoked
Tibia, Fibula	Complete	--	--	--	--	Complete			Smoked

incomplete incineration of the elbow region occurs in the cremation from the Pomranky and Andrews sites. The significance of this consistent characteristic is not readily apparent. One would expect the elbow region to be exposed as it is not protected by large muscles; it should, therefore, be calcined. We can only postlulate that as part of the preparation of the corpse for cremation the arms were bound in such a way that the elbow region was protected from intense burning — arms across the body, and/or thighs flexed with the elbows between the trunk and thighs? The basal region of the skull, which Baby found to be consistently incinerated among Hopewell cremations, occurs incompletely incinerated with the single exception of Pomranky cremation No. 4. This suggests that the head was still attached to the body at the time of the burning of the Michigan bodies. Such an inference is justified in terms of the large nuchal muscles which protect the base of the skull. It can be concluded from this comparison that the treatment of the body prior to cremation was strikingly different among the Hopewell societies as opposed to those represented by the Michigan cremations. The Andrews and Pomranky site samples are virtually identical in the degree to which various body regions were differentially burned. Both of these are in rather striking contrast to the Hogers site sample. The latter is admittedly very poorly represented, but, nevertheless, it was subjected to much less intense heat and shows a variant pattern of differential burning. Although the entries in Table One do not suggest much variation in the degree of burning intensity among the cremations from the several sites, inspection of the remains shows such variation. Each individual cremation has peculiarities to the degree to which various parts are completely calcined, giving each a slightly different color grade when viewed in mass. This suggests individual treatment for each of the buried units of cremated remains.

In summary, the individuals represented in Baby's sample of Hopewell remains were treated differently at the time of cremation from those at the Pomranky and Andrews sites. The latter two sites differ considerably from the treatment represented at the Hogers site. Regardless of the latter differences the cremations from the Michigan sites represent

separate crematory episodes since there is more homogeneity within a single crematory feature in the degree of differential incineration than there is between crematory features. This is viewed as evidence for burning on individual or single crematory pyres. The Michigan data further suggests that the cremations do not represent the burning of multiple elements of dismembered bodies as do the Hopewell samples; instead they indicate the burning of complete bodies or unitary parts thereof. Cremated individuals from the Andrews and Pomranky sites may have been partially flexed at the time of incineration.

As regards the question of whether bodies in the flesh or dry bones were cremated, it can be flatly stated that in all cases, judging from the experiments conducted by Krogman, Baby, and those reported here, the Michigan examples represent the incineration of bodies in the flesh.

Turning now to the interesting question of treatment after burning and the degree to which individuals were afforded differential treatment, a comparison of the contents of the cremation will be made. Table number two represents the frequency lists of the various indentifiable anatomical parts present in each feature.

Inspection of the table shows that at the Pomranky site, with the exception of cremation number three, there is a complete lack of lower limb and pelvic fragments. While the femur is represented in cremation number three there is a general lack of lower limb bones. This sample pattern is duplicated at the Andrews sites for cremations number four and P-2. These observations suggest that the individuals were dismembered prior to burning; the lower limbs not being burned with the torso, or that there was selection in the removal of the cremated bone from the crematory basin prior to deposition in the graves. All of these features have in common their occurrence as associated elements within the grave of a noncremated individual. Unlike the latter, Andrews burial No. 3 was a discrete burial of cremated bone, and did yield fragments representative of the entire skeleton. The Hogers site feature was a cremation in situ, buried in the crematory basin, and is also representative of the entire skeleton. On the basis of these limited data there appears to be differential treatment

TABLE NO. 2

Tabulation of Frequency of Skeletal Part by Cremation as well as Quantity of Bone, Number of Individuals, Sex and Age.

Anatomical Part	Pomranky				Andrews			Hogers
	1	2	3	4	3	4	p2	1
Skull	37	26	35	14	x	x	x	7
Teeth	4	-	-	8	x	x	x	-
Vertebrae	1	4	4	3	x	x	x	3
Humerus	38	2	13	6	x	x	-	-
Radius, Ulna	4	10	8	11	x	x	-	3
Phalanges	-	1	1	20	x	x	-	1
Ribs	2	5	5	-	x	x	-	6
Pelvis	-	-	-	-	x	-	-	2
Femur	-	-	7	-	x	-	x	1
Patella	-	-	-	-	x	-	-	-
Tibia	-	-	-	-	x	-	-	2
Fibula	-	-	-	-	x	-	-	1
Phalanges	-	-	-	-	x	-	-	-
Weight of Total	36.2gm.	109.5gm.	93.5gm.	46.2gm.	?	?	?	334. gm.
No. of Individuals	1	1	1	1	4	1	1	1
* Sex	?	?	?	?	3 female 1-?	?	?	?
* Age	8-12	12-15	10-13	5-7	3 adult 1 child	child	child	12-17

* For recent work on Sexing & Aging cremations see:

"Nagot Om Bestamning Av Branda Ben Och Deras Vetenskapliga" By Av N-G Gejvall in **Fynd**, Goteborgs Och Bonuslans Fornminnesforenings Tidskrift, Goteborg, Sweden. 1959, pp. 40-47.

of individuals afforded discrete burial as opposed to those whose remains were incorporated as part of the materials buried with a non-cremated person. Inspection of the age and sex data suggests that these differences may be associated with age and sex distinctions ritually recognized among the societies represented. All of the individuals who were incorporated and hence only partially represented were subadults. Cremated adult females were afforded discrete burial at the Andrews sites. As in the case of previous comparisons the Hogers site differs, in this case an adolescent was afforded discrete burial.

Of methodological interest is the observation that there is a generalized regression of weight of cremated bone with age of individual within the samples from the Pomranky site. Certainly this sample is insufficient to establish a reliable correlation. Yet the data suggest that such a correlation may exist. If this is so, it could serve as a further aid in aging cremated individuals given certain control on the burning procedures.

We might summarize the findings as follows:

1() Experiments confirmed the findings of Baby; cremations of dry bones can be distinguished from those of green or flesh covered bone. Dry bones exhibit superficial checking of the surface, longitudinal splitting, and a lack of warping. Cremated fresh bones are dinstinguishable by warping, deep transverse fracturing frequently on curvilinear planes and longitudinal splitting or a ragged nature. In addition, portions of endosteum are occasionally observed on the surface of cremated fresh bone.

(2) Examination of cremations from the Michigan area revealed that they were all burnings of fresh bone and had been incinerated on discrete as opposed to communal pyres.

(3) Comparison of the Michigan and Hopewell cremations reveals a much different pattern of treatment of the body prior to incineration. Hopewell practices involved the partial dismemberment of the body prior to its complete cremation. The Michigan samples suggest the cremation of complete or partial bodies but in the latter case disarticulated parts were not burned together. At the Andrews and Pomranky sites, the bodies were probably flexed so that the elbows

were protected by the muscle and tissue of the abdomen and thighs. This does not appear to have been the practice at the Hogers site.

(4) Comparison of the several cremations from Michigan reveals that those occurring as inclusions with non-cremated individuals invariably were children and young adolescents who had been incinerated at another location. Such cremations were further distinctive in that the body from the pelvis down was not generally represented. In contrast, the burial which occurred at the Andrews site as a discrete interment, as well as the Hogers site burial, represented the complete individual. Discrete burial of cremated remains was restricted to adult women at the Andrews site. The recognition of these distinctions suggest that the practice of cremation was being utilized as an element of social ritual for distinguishing between individuals occupying socially differentiated status positions. Age and sex distinction being most crucial for understanding the crematory practices at the sites studied.

(5) The burial practices as elucidated through this study reveal a number of common features in the mortuary ceremonialism represented at the Pomranky and Andrews sites while the Hogers site is singularly distinctive. These findings suggest much closer cultural ties between the societies represented at the former sites than either have with that represented by the latter.

Admittedly these conclusions are based on a very small sample and the pan-social relability of the age-sex distinctions discussed in the fourth point above are made tenuous on this account. Regardless, the results should be sufficient to point to the necessity for formal and comparative analysis of cremated remains as a profitable approach to the study of differing mortuary practices and to the way various classes of individuals were differentially treated in mortuary rites.

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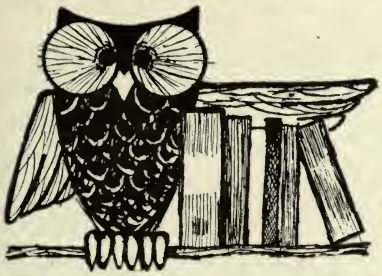

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

This issue of THE BOOKSHELF has been turned over almost entirely to the distaff side of the anthropological profession. Our lead review by Mildred Mott Wedel is a fine appraisal of Robert L. Hall's Carcajou Point report. Mrs. Wedel, the wife of the Curator of Anthropology of the U. S. National Museum whose recent book on Plains archaeology is a major landmark of our time, has not simply absorbed her archaeology in osmotic fashion but is an archaeologist in her own right. As author of one of the earliest reports on Oneota (**Iowa Journal of History and Politics,** 1938) as well as the most recent, comprehensive study of this group in Iowa (**Missouri Archaeologist,** 1959), she is ideally qualified for the task. Not content with the review, Mrs. Wedel has also contributed a brief "Note on Oneota Classification" which appears immediately following the review. As the note is so intimately connected with the content of the review, this position seems more appropriate than separate placement in the journal.

In a second review, Catharine McClellan gives us an appraisal of Paul MacKendrick's **The Greek Stones Speak.** It has been our intention, so far as the editorial policy of THE BOOKSHELF is concerned, to restrict coverage to the archaeology and ethnology of the Great Lakes and Upper Mississippi valley primarily, this region being most relevant to the interests of the journal. But Professor MacKendrick as a member of the Classics Department of the University of Wisconsin provides us with a local tie. Further, Dr. McClellan who has been on leave this year from her post in the Department of Anthropology of the University of Wisconsin to spend the winter among the Indians in Canada's Yukon Territory, her special research concern for some years, has hoped

that she might revive an earlier interest in classical archaeology by a trip to Greece during the summer months. Although she has been accompanied by her two city-bred dogs (appropriately dressed in Indian moccasins when they brave the rigorous winter), writing a review on a study of ancient Greece has doubtless been a useful and therapeutic reminder of the amenities of civilization.

* * * * *

The Archeology of Carcajou Point: With an Interpretation of the Development of Oneota Culture in Wisconsin by Robert L. Hall. The University of Wisconsin Press, Madison, 1962; 2 vols., viii -:- 200 pp., 2 appendices, bibliography and index in Vol. I and 83 plates and 15 tables in Vol. II. $8.00.

This publication is a modified doctoral thesis which was prepared at the University of Wisconsin. It consists of one volume of text and a second volume of maps, clear and numerous illustrations, and tables. It is good to have a Wisconsin doctoral thesis in book form that one can pull from the shelf at will.

For the most part, this is a report upon excavations made in 1957 at Carcajou Point on Lake Koshkonong, Jefferson County, Wisconsin. Of wider significance, however, is the interpretative chapter in which Hall discusses interrelationships between components and established foci of the Upper and Middle Mississippi cultures in Wisconsin, Minnesota, Iowa and Illinois, and ultimately suggests the course of cultural development that terminated in the Oneota Aspect (or 'Classic Oneota'). It is, therefore, a study of interest to anyone concerned with Oneota materials, as well as to those whose primary interest is Wisconsin archeology. It is of more than casual interest because Hall has ably presented his data, has effectively supplemented his archeological facts with historical and ethnological material, and has given the kind of thoughtful consideration to the problems scrutinized that makes a stimulating discussion of them possible. The importance of this work for all Wisconsin archeologists justifies a somewhat detailed review.

On the basis of surface finds, before excavation, it had been assumed that Carcajou Point materials were mostly post-

contact in time. However, excavation revealed only three of 79 features with historical tie-ups. These are thought to have been related to Winnebago occupation. All the historic Winnebago material is designated the White Crow Component although it may not all be due to White Crow's village at this site. The final chapter of volume 1 is devoted to documentation of Winnebago use of the area, and Appendix A discusses the collapse of Winnebago domination in eastern Wisconsin.

The bulk of the site report deals with the prehistoric manifestation which was explored in two large excavation units and two small test squares, all within 350 feet of each other. The numbered features were mainly refuse pits, both "basin-shaped" and "beaker-shaped", and the discussion of them (aside from specific contents) is a good example of Hall's method of pulling in related archeological data and ethnographic descriptions to make a very useful synthesis of information on a subject—in this case a cultural feature that has at times been almost completely neglected in reports from this area. Remains of two burials, possibly three (8 individuals), were found in pits; both primary and secondary interment were indicated, and grave goods were present.

Postholes occurred in abundance, but their structural purpose was often difficult to postulate. In several instances, house types such as the mat-covered wigwam and the rectangular, gabled summer house of historic Wisconsin Indians were suggested. Of great importance was the discovery and complete excavation of one "semi-subterranean" dwelling which was rectilineal with rounded corners and a corner entrance, and which was outlined by a foot-wide trench, 18" deep, in which posts were set at intervals of a few feet. Interior roof support came from a large center post and other widely-spaced interior posts. Certain expected features such as a prepared floor surface and fire basin were not found, nor were wattle or daub, and interpretation of refuse pit associations was hampered by soil disturbance due to plowing. Evidence of a similar house was noted nearby but could not be excavated at that time. It is certainly to be hoped that before long a much larger area can be carefully cleared here in order to get more data on individual houses and possibly to

obtain a settlement pattern for the community—information that would be very desirable for this period and area. This might also offer a good opportunity to study the variations in pottery from one household to another.

Three radiocarbon dates, circa A. D. 998, 1028, and 1528, came from the prehistoric component. This time range and the lateness of the last date raised interpretative problems. Their solution was complicated by the fact that although occupation through possibly centuries was indicated, there was no sharp physical stratification nor distinct cultural shift apparent. Valid interpretation necessitated a study of structural relationships between refuse pits and between house features and pits, correlated with statistical studies of pottery type and style occurrences, and associations. There was also consideration of artifact typology other than pottery. Negative evidence was considered as well as presence in the thorough and complex anaylsis. The final opinion of Hall was that the prehistoric or Carcajou Component revealed cultural continuity, with gradual culture change, from an attenuated Middle Mississippi culture in the direction of what Hall would call the Classic Oneota Horizon of the Oneota Aspect. A hiatus between the Carcajou and White Crow Components exists at the site due to absence of Classic Oneota materials. Judgment was reserved on acceptance of the latest of the radiocarbon dates, but the two earlier ones would seem to be acceptable.

The prehistoric complex is designated the Koshkonong Focus with the terms Early and Late applied somewhat broadly in describing certain attributes and trends. It is to be noted that this use of the term 'focus' is not strictly in accordance with the more purely descriptive, static concept set up in the Midwestern Classification system. It is purposely used here to apply to a cultural continuum through time and detailed justification for this usage is presented on the basis of the need to adjust terminology to archeological actuality.

There is no general summary of the 'lifeway' of the people who lived at this site but one may find some of the information for such a reconstruction in the analysis of organic refuse and the description of the artifacts from the refuse pits. They appear to have been a semi-sedentary people dependent

on a mixed economy of fishing, hunting, and gardening. During the site occupation there was a shift from greater to less use of bison and elk and white-tailed deer always the dominant food animal. There was also a changing pattern in the utilization of the lake resources. The non-pottery artifact forms are all compatible with Middle or Upper Mississippi trait lists. They are adequately described and are illustrated as well.

Almost 3600 Mississippi complex sherds were used for study of the pottery; almost 300 of these were rims, and there was one complete vessel. The sherds were ultimately divided by Hall into over twenty descriptive 'categories', a 'category' consisting of an established or proposed pottery type, of a rim type, or a group of handles and lugs, a group of sherds from toy pots, or even a single unclassified decorated sherd, et cetera. Six new pottery types are proposed. Each is based on not over ten sherds from the Carcajou Component (with a whole vessel in one case) and is supplemented by a few sherds or pots from a larger number of individual sites throughout Wisconsin. Many of the sherds are evidently large-sized giving good rim and shoulder sections.

It would have been helpful in understanding the significance of these Proposed Types if there had been a discussion of the meaning of the term 'type' as it is used in this study and of the theoretical considerations behind the choice of the criteria on which the types were set up. Blessed now with hindsight, I wish I had been more explicit in this matter in my Oneota Orr Focus report. Such statements of theory and procedure give desirable insight into the type descriptions and result in much more precise understanding and accurate use of the types by others.

For instance, it would seem to me that Hall's Carcajou and Grand River Proposed Types differ from his 'Lake Winnegabo Trailed' and 'Perrot Punctate' (App. B), Henning's 'Correctionville Trailed' (1961, p. 27) and my 'Allamakee Trailed' (1959, pp. 91-92) just as the Lake Koshkonong Focus differs from the Orr Focus. They too represent a development through a long time period and reflect much more cultural variety and change. They have as

their diagnostic traits (within the limitations of Mississippi ware) the presence or absence of decoration and placement of it when present. There is extensive variety in vessel form. Certain features of form show change during the focal time period; others occur in variety but do not show a particular developmental trend; e.g. there are high and low rims, vertical and everted, thickened and unthickened. Decorative motifs and techniques are more stable.

The pottery types such as Correctionville Trailed or Lake Winnebago Trailed, on the other hand, show greater uniformity of vessel form along with the similarity in decoration. They are definitely set apart from Middle Mississippi by the very nature of their attributes, and in addition are consciously defined in the comparative context of all Oneota Aspect sites. These types may reflect a more homogeneous population than do the Proposed Types of Hall and certainly do represent a shorter time period. It may sometime become possible, through other sites, to set up types for parts of this cultural continuum represented by the Koshkonong Focus that will be more comparable in 'kind' to the Oneota Aspect types. Meanwhile, these Proposed Types serve a different but useful purpose.

Although all these Proposed Types are noted as occurring outside the Carcajau Component, there is no attempt to show how the occurrences strengthen the validity of the Types beyond geographical distribution. The Proposed 'Koshkonong Bold' Type is said to occur in the Oneota Orr Focus and at Leary. The relatively few sherds and vessels indicated must be those which differ in no way in form or decoration from the main body of the pottery except that the trailing is done with the finger and may be bold in execution. This has been considered by others as a slight technical (or style) variation within a 'type'. Hall's Koshkonong Bold may well have significance of some sort but it would not seem to have the same validity in all the occurrences he mentions.

As stated before, the section of this book which deals with the external relations of the Koshkonong Focus is probably the most stimulating in the volume. Here Hall explicitly states his thesis that the Koshkonong Focus is in the line of cultural development which culminated in what has been called

the Oneota Aspect; he compares its position with that of the Silvernale Focus (Minnesota) and Apple River Focus (northwest Illinois). Each of these foci represent communities with antecedents in the Middle Mississippi settlement of the Cahokia area, communities which seem to have existed for a number of generations. The very real difficulties of fitting such foci into the Midwest Classification System are enumerated and Hall suggests a system of classifications which would conceive of Oneota as a 'tradition'. The 'Oneota tradition' could be divided into three 'horizons', with the earliest designated Emergent Oneota, the next, Developmental Oneota, and the final one, Classic Oneota. The last category would correspond to part, at least, of what has heretofore been called the 'Oneota Aspect'. The two earlier divisions are only tentatively defined, but the Koshkonong Focus would straddle both. Within the tradition sequence, Hall recognizes more than one 'group continuity'; one that appears along the Mississippi River and ultimately became the Orr and Blue Earth Foci, one that appears farther east and became the Lake Winnebago and Huber Foci. Hall feels strongly that a classification system involving the tradition-horizon concepts would be highly useful and effective for Mississippian components in the general upper Mississippi River area.

Dr. Hall is to be strongly commended for bringing into print so much data from the upper Mississippi River area not previously assembled and integrated. Several problems involved in the general Oneota culture picture are pursued profitably: the appearance of shell-tempered pottery in otherwise Woodland cultures, the chronological significance of plain pottery, punctates as a style element, et cetera. In fact, the amount of information incorporated into this book is very impressive. The two volumes are a solid contribution to middlewestern archeology, and are an important addition to the slowly increasing number of publications on the Oneota culture.

Mildred Mott Wedel
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NOTE ON ONEOTA CLASSIFICATION

In the preceding review of Dr. Hall's book, note is taken of a new classification system proposed for all Oneota materials. Hall describes the system's usefulness in the Upper Mississippi area, but, of course, Oneota materials are more widespread. It seems apropos to point out some of the problems connected with its application to Oneota sites farther west and to do this in a journal like **The Wisconsin Archeologist** which undoubtedly reaches all those working with Oneota and related sites.

The region on which Hall concentrates is that where Oneota Aspect materials were first formally recognized and defined. Later, when similar manifestations came to light from a larger area including eastern Illinois, Missouri, Nebraska and Kansas, they too were included in the Oneota Aspect of the Midwestern Classification System. The basis for grouping them together has been trait similarity with pottery particularly important, but other traits have not been neglected. This total culture-trait comparison has been contributed to the circumstance that the Aspect sites seem to fall into either the late prehistoric or historic periods, or to extend from the former into the latter. However, temporal relationships have not been worked out between sites and foci within the Aspect except in the broadest of terms.

Some sites that have detailed similarities within the Aspect range have been grouped into foci: the Lake Winnebago, the Orr, the Correctionville, and the Blue Earth. Some sites still stand alone, as Leary, Ashland (component B), and Stanton (prehistoric component) in Nebraska and Utz in Missouri. Although the Fanning (Kansas) and Huber (Illinois) sites have both been classified in the Oneota Aspect, each stands somewhat separate from the rest of the unit, and the temporal or cultural reasons for this are not fully understood. There is no question but that developmental continuities exist within the Aspect between foci and sites, but the sequences are not yet clear; as one example only, the two last foci named above and the Shrake-Gillies site (Wisconsin) are undoubtedly related genetically, but no one has yet postulated a developmental sequence for them.

Originally McKern included the Walker-Hooper and related sites (Grand River Focus) in the Oneota Aspect, but as that unit grew in size by the addition of other sites, mostly to the westward, the complexion of the Aspect changed slightly. The feeling developed among some archeologists that the Grand River Focus differed significantly enough from the rest of the Aspect to justify omitting it.

The new classification system discussed in Dr. Hall's book comprehends a much larger body of archeological material than does the Oneota Aspect, one which has been loosely called by the single term 'Oneota' for years by some people. It includes not only the site or site components heretofore classed in the Aspect, but also certain other archeological components which seem to precede developmentally certain, at least, of the Oneota Aspect sites. These components, particularly in pottery traits, show strong relationship with the Old Village and Rock River Foci of the Middle Mississippi complex.

'Oneota' takes on the concept of a 'tradition' in the new system, a tradition that is divided through time into 'horizons' or stages. Three horizons are suggested: Emergent Oneota, Developmental Oneota, and Classic Oneota, the most recent. The earliest, according to Hall, would include the early half of the Koshkonong Focus, the Walker-Hooper site, and possibly the Minnesota Bartron site. The Classic Oneota Horizon would then be a stage "corresponding largely to the Oneota Aspect as it has been described in the past" (Hall, vol. 1, p. 106).

Hall takes a tentative step further in classification and suggests that certain "group continuities" are discernible through time (vol. 1, pp. 156-157). These divide the 'tradition' vertically and cut through the 'horizons'. They correlate with ethnic groups. He indicates two such continuities and labels them (vol. 2, p. 121) "Winnebago" and "Chiwere Sioux". This diagram, according to the caption, pertains to development of Oneota culture in Wisconsin and closely neighboring areas"; its significance for western Oneota manifestations is not indicated.

One of the important theoretical considerations that arises in switching from a fundamentally descriptive classification

like the Midwestern System to one expressing genetic and time relationships is whether or not the archeological situation is well enough known to make it workable. Dr. Hall evidently feels that in Wisconsin all Upper Mississippi complex materials are part of the 'Oneota tradition' and does not feel that cultural connotations implicit in the tradition-horizon system will in any way hamper correct interpretation. His reason for proposing it, as he explains in detail, is to show temporal and genetic relationships more effectively and thus to facilitate meaningful classification.

On the other hand, it is questionable if the archeological situation at the Oneota sites farther west is well enough understood to warrant placing them in a classification system that has these definite developmental implications. At the December, 1960, impromptu conference in Columbia, Mo., the general opinion of those present who were involved with western Oneota was that theoretically the new system as presented by Dr. Hall was useful and that in the future a tradition-horizon scheme of this sort would probably be the best way to organize all Oneota materials.

Our present state of knowledge, however, presents difficulties. If only part of the sites now included in the Oneota Aspect are admitted into the Classic Oneota Horizon (Mo. Arch'l. Soc. Newsletter, no. 148, p. 5; Hall, vol. 1, p. 106) then use of the system — while it brings to berth the 'floating foci' of eastern Oneota — sets afloat western Oneota sites that have been anchored in the Aspect.

If all the sites now in the Aspect are considered to be in the Classic Oneota Horizon, then the developmental implications may be inaccurate. Until more information is available, It cannot propertly be assumed that all the western Oneota Aspect sites are directly in the developmental streams indicated as 'group continuities' by Dr. Hall. Perhaps the remarkable cultural homogeneity that exists in such a geographically widespread unit as the Oneota Aspect does mean that it represents the peregrinations of a single ethnic group; certainly there are those who have thought so. Dr. Hall, by labelling one group continuity "Chiwere Sioux" evidently believes that the Utz site and related materials in Missouri came from the line of development which resulted also in the Orr

and Blue Earth Foci. But take for instance the Stanton site in Nebraska. Its pottery of the prehistoric component is no more different from the Orr Focus pottery than is the Lake Winnebago, and it unquestionably belongs in the Oneota Aspect. But if it is prehistoric Omaha (Dhegiha Sioux), then is it meaningful or useful to place it in a Classic Oneota Horizon where the Developmental Horizon shows only foci that contribute to the development of Winnebago and Chiwere Siouan tribes? Fanning is a similar problem. And neither Stanton nor Fanning would seem to be in the same line of development with the Osage materials. Although ultimately Stanton may be found to tie in with the same 'group continuity' as the Orr Focus, it is more important that thinking now on these problems not be hampered by a restrictive or possibly misleading classification system. Until the Utz site analyses are made, and there is further investigation of 'Oneota tradition' and Oneota Aspect sites in northwestern Missouri and in Iowa, and until some radiocarbon dates are forthcoming for Leary, Correctionville, and other sites, I do not think that the possibility of other 'group continuities', perhaps along the Missouri River, should be overlooked.

Morever, as noted above, the genetic and many temporal relationships between foci and sites in the western part of the Oneota Aspect are not known. Thus with interpretation hampered by lack of information, western Oneota components could only be represented at present in the Classic Oneota Horizon by a listing of sites and foci and with no relationships indicated between them.

Therefore, while the tradition-horizon scheme is useful in the area with which Dr. Hall has been chiefly concerned, it seems to me that it cannot be used easily or effectively farther west at this time. There the Oneota Aspect still has validity and usefulness, being a grouping of similar archeological materials from a shared time horizon within which genetic relationships are not yet known and for which the earlier developmental directions are not understood with certainty.

Dr. Hall says that if the Aspect terminology and concept continue to be used instead of the tradition-horizon system (vol. 1, pp. 106-127), then he would put the Grand River and Koshkonong Foci in the Oneota Aspect. This is due to his

thinking mainly within the context of the Wisconsin-Minnesota-Illinois-eastern Iowa area and not looking at the entire Oneota picture, for such classification would nullify the significance the Aspect has for western Oneota and certainly compound troubles for those currently struggling with its problems. Viewing the larger Oneota situation, an alternative but makeshift course would be to consider the Developmental Oneota Horizon as an aspect. Perhaps it is better, but undeniably messy, to use the tradition-horizon system where it can be used satisfactorily because it is closer to cultural reality, and to keep the Aspect grouping for the western materials that cannot yet be interpreted properly for correct placement in the other system. It is to be hoped that before long increased knowledge will speed up the organization of all Oneota components into the more coherent, culturally realistic classification system.

The word 'Oneota' itself has been a source of confusion for many years. It has meant many things to many people, ranging from the tradition concept used by Griffin and Wisconsin and Illinois oriented archeologists to much more specific meaning used more often by those working farther west. From now on, it will be even more confusing, and accurate communication will only be possible when the word 'Oneota' is never used alone but only in an adjectival sense, as "Oneota Aspect' or 'Oneota tradition', or with an adjectival modifier. as 'Classic Oneota'. I personally would approve of the tradition being given a different name and regret that 'Upper Mississippi' is not available.

Mildred Mott Wedel
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The Greek Stones Speak, The Story of Archaeology in Greek Lands by Paul MacKendrick. St. Martin's Press, New York, 1962; pp. xviii + 470, 180 illustrations, bibliography, and index of proper names. $7.50.

I burned my oil lamps late while reading this book, and it was a great pleasure. The horned owl hooting from a nearby spruce may have been terrifying the local Indians, but Professor MacKendrick had successfully transferred me from

the frozen sub-arctic to the "Lyric Age" of Greece and had transformed the owl into the charming Athenian bird on the cover of his book.

In **The Greek Stones Speak,** MacKendrick gives us a fine companion to his earlier volume on Italian archaeology. Anyone interested in Greek archaeology will enjoy it and learn much from it, and anyone going to Greece should certainly make room for it in his luggage. The book has many virtues: the scope is exceptionally broad; the information is both scholarly and up to date; the writing and most of the profuse photographs and plans are excellent; and there is a useful bibliography and index. The whole is a supremely welcome relief from the recent spate of breathless and careless journalism purporting to acquaint us with the wonders of the Greek past.

The general plan is chronological, moving from "The Aegean in Prehistory" to "The Greek World Under Roman Sway." Within this framework, MacKendrick treats a series of representative sites from each period, and from the entire Mediterranean world, both east and west. He describes not only the major discoveries at each place, but also the methods of excavation and the varied conclusions reached about their findings. To present such a combination of data requires great skill and a formidable background of knowledge. For the most part, however, MacKendrick guides us unerringly from Schliemann at Troy to Rostovtzeff at Dura-Europus. His emphasis necessarily falls most heavily on architecture and the other arts, since these have long been the prime concerns of Greek archaeologists.

In a book so packed with concrete information, the author cannot spin out all the pros and cons of interpretation to which Greek archeological finds have been subjected, yet he manages to highlight the main controversies, both past and current, and to show how archeology has revealed whole sections of otherwise undocumented Greek development. He also shows how often it has illumined written history.

MacKendrick makes it clear that important questions still remain unanswered — e. g. who were the first Greek speakers in the Mediterranean — but brief summaries at the close of each chapter offer his personal interpretation of the general

course of Greek culture history. From time to time he also expresses his ideas about the nature of Greek genius. For example, he feels rather strongly that the Greeks honored their motto "Nothing in Excess" rather more in the breech than not, and that if we are to understand the flamboyance of later Greek architecture and art we must give up the notion that cool restraint was a central fact of Greek behavior (pp. 171, 293, 384). The truth of the matter is surely more complex than MacKendrick indicates, and I am sure he would agree that it requires analysis of all aspects of Greek culture, but that is a matter for a separate essay. The Athabascans I am currently studying also constantly repeat, "nothing too much" — and rarely live up to the ideal, but they certainly have achieved little that resembles Greek culture.

In any case, lest I go to too great excess either in praising the book or pursuing unnecessary by-paths, let me enter a few mild criticisms. Since MacKendrich stresses town sites and architecture to such an extent, I would welcome a little more precise discussion of the relationship between the settlement patterns and the ecological backgrounds. Also, a few of the groundplans have been so reduced in size as to be of little use to the reader. I heartily applaud the many useful maps, but wish that in some of the double page ones crucial place names and whole islands had not disappeared into the binding. Finally, the scale of the objects or buildings illustrated is not always given, although there is usually information for the most critical pieces either in the text or in the caption (e. g. 1.18, 1.19). This neglect to provide scale — found among both Old and New World archeologists — is a pet peeve of mine. I will never forget my astonishment when after a whole year of viewing slides illustrating objects of Classical antiquity, I was confronted with some of the actual items. A Greek **kore** which had loomed monstrous on the screen turned out to be less than half life size, and pots which I had thought to be tiny stood waist high. It is hard for those familiar with the real thing to remember how poorly most photographs convey size and distance. I hope MacKendrick and everybody else will include scales in all future archaeological books.

I hope too, of course, that MacKendrick will soon write us another volume as thorough and useful as those he has already published. They are popular in the best sense of the word. If those who think they are interested primarily in American archeology will read them they will soon see not only what it is that all archeologists have in common, but also where it is that emphases and methodologies may sometimes differ.

Catherine McClellan
University of Wisconsin

DO YOU HAVE ANY "TURKEY TAILS" OR CACHES OF LEAF-SHAPED OR TRIANGULAR BLADES?

The Laboratory of Achaeology at the University of Chicago is currently investigating the distribution and density of late Archaic-Early Woodland cultures of the Midwest region. One of the more diagnostic artifacts that can be related over a wide area to this general time period is the "turkey tail" point. Another typical artifact is the triangular or leaf-shaped cache blade. These blades are normally found in caches or with burials, and they often number from ten to five hundred in a single find. If you have such a cache or any "turkey tail" points, we would like to know about it.

We need your help. We must obtain as much information about the distribution and number of these items as possible. Only you, our amateur colleague, can provide this much needed data.

If you have any "turkey tail" points in your collection we would appreciate your writing to us and including the following information:

1) Name and address.
2) The number of "turkey tails" in your collection.
3) Where they were found, even if the only information you have is the state and county.

Because we know that there are regional variations in the shape and size of "turkey tails," we would greatly appreciate your time and cooperation in including an outline tracing of your specimens which will provide us with much additional information.

If you have any caches of leaf-shaped or triangular blades, we would like:

1) Your name and address
2) Number of blades in the cache.
3) Where the cache was found, even if the only information you have is the state and county.

In many cases, caches have been previously "reported." Nevertheless, we would like to know the present whereabouts of these caches so that we could possibly arrange to come and study the specimens. The above information, together with anything more you might add, will be very much appreciated.

Address your letters to:

Lewis R. Binford
Asst. Prof. of Anthropology
Dept. of Anthropology
University of Chicago
Chicago 37, Illinois

GEORGE R. FOX

We note with sorrow the death of George R. Fox on June 3, 1963 in Dowagiac, Michigan at the age of 83. Mr. Fox is a long time member of the Society and a contributor of 12 articles to the Wisconsin Archeologist as well as articles to other journals. His long and active interest in Midwestern archeology did much to promote interest and knowledge in this field. He will be missed by the Society both as a friend and creative archeologist.

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PLAINVIEW TYPE POINT

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THE DISPERSAL OF COPPER ARTIFACTS IN THE LATE ARCHAIC PERIOD OF PREHISTORIC NORTH AMERICA

Ira L. Fogel

PREFACE

The utilization and dispersal of raw materials in prehistoric time is a subject that invites the attention of geographers as well as archeologists. In this study an attempt is made to understand how copper was dispersed in eastern North America during the Late Archaic period. Of all scarce resources, copper holds the unique position of being the first metal used by the very early aboriginal population of eastern North America. The metal was valuable by virtue of (1) its occurrence in relatively isolated places, (2) the limited loci in which it was mined, (3) the difficulty of the mining process, (4) the distances over which the commodity was moved from source areas to manufacturing points and places of utilization.

The time period which appears to hold the greatest potential for new insights is the Late Archaic period. This period was similar to the Mesolithic era in European archeology, which is characterized by polished stone artifacts and the domesticated dog but lacks pottery or agriculture. The predominant uses of copper during the Archaic period are believed to be significantly different from the uses of copper in the following Woodland period and probably reflect significant differences in social organization. Moreover, the utilization of copper at this primitive level of technology was a major accomplishment, and, accordingly, has attracted the attention of numerous archeologists, collectors of antiquities, and historians of mining technology.

The specific questions raised in this paper may be stated as follows: Since it is known that Wisconsin yields the largest number of Archaic copper artifacts, and the numbers diminish in other states, what relationships or differences existed in

terms of time, culture groups, environmental changes, distance from the source of raw material or center of manufacture, major regional associations or modes of dispersal? And, does such knowledge contribute to our understanding of trade, adaptions to major ecosystems, and cultural diversity or development? Perhaps this type of analysis could be used to answer other questions involving copper as an element in prehistoric cultures, or as a methodology for understanding the role that exotic materials play in cultural systems.

The most difficult and frustrating part of this study was the collection and verification of the descriptive and metrical attributes, and the determination of the chronological and cultural context of the specimens. No single archeological report was satisfactory for the purposes of the study. It was necessary to visit museums, correspond with many collectors, students, and professionals, and rely on much unpublished data.

I am greatly indebted, therefore, to a great many people. Without their time and effort this undertaking would not have been possible. Among those who provided me with specific information or allowed me to examine material in their custody are Jim Brown of the Illinois State Museum, Joan E. Freeman of the Museum of the State Historical Society of Wisconsin, Emerson F. Greenman and Albert C. Spaulding of the University of Oregon, Robert J. Hruska of the Oshkosh Public Museum, George I. Quimby of the Chicago Natural History Museum, Robert E. Ritzenthaler of the Milwaukee Public Museum, David E. Taggart of the University of Michigan, and Kirk Whaley of Milwaukee.

In addition, I wish to express grateful appreciation to Lewis R. Binford of the Department of Anthropology and Marvin W. Mikesell of the Department of Geography at the University of Chicago for valuable assistance and critical comments on the original manuscript. During the writing of the M. A. thesis in the Department of Geography at the University of Chicago the author benefited especially from the numerous suggestions and criticisms of Mr. Binford. Mr. Mikesell offered helpful guidance during the difficult formative stages of the study. Numerous archeologists have been kind enough to read the original M. A. thesis and offer suggestions. Any errors of fact or interpretation remaining are those of the

author. The outline maps are used with the permission of the Goode Base Map Series of the Department of Geography at the University of Chicago.

Finally, I wish to acknowledge the assistance of my parents. Their support during the period when I was studying at the University of Chicago allowed me to devote my time to this effort.

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CHAPTER I

INTRODUCTION

During the first half of this century, archeologists and amateur collectors found copper artifacts at numerous localities in Wisconsin. The great antiquity of these artifacts was demonstrated by heavy patination, occasional deep corosion, and frequent lack of association with other artifacts or human bones. Similar copper artifacts were uncovered in Michigan, Minnesota, New York, Ontario, and elsewhere, and the archeological literature includes numerous commentaries on copper trade. In 1942, W. C. McKern applied the term "Old Copper Culture" to a complex of Wisconsin copper artifacts. Nevertheless, until 1946 no site had been reported that could supply more information on the tool assemblage and livelihood of this ancient people. [1]

Excavations of some recently discovered sites in Wisconsin and Michigan have added much additional information on the Late Archaic period in the Upper Great Lakes region. The trait complexes from these sites show striking similarities to trait complexes of Archaic and Transitional sites in neighboring states, including some of the copper forms that are so abundant on the surface of eastern Wisconsin. Since the ultimate source of the copper material is in Upper Michigan and the vast majority of implements are in eastern Wisconsin, [2] a distributional study of copper artifacts in general and certain specific forms in particular, offers an excellent opportunity to

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[1] Warren L. Wittry and Robert E. Ritzenthaler, "The Old Copper Complex: An Archaic Manifestation in Wisconsin," **American Antiquity**, XXI, No. 3 (1956), p. 244.

[2] Warren L. Wittry, "A Preliminary Study of the Old Copper Complex," **The Wisconsin Archeologist**, n. s., XXXII, No. 1 (March, 1951), 1-18.

trace the dispersal of raw material and artifacts during the Late Archaic period.

Although copper, particularly drift copper, may have been used during the middle portion of this period,[3] it became a commonplace material for tools and ornaments only in the terminal phase of the Archaic period. Unfortunately, natural and human disturbance of the material remains of Archaic peoples have obliterated evidence of the vast majority of habitation and burial sites. Most of the copper artifacts in private hands or in museums were collected as "surface finds," particularly in the eastern portion of Wisconsin.

It is evident, therefore, that the limited information about the distribution of copper artifacts and their cultural associations requires special methods of analysis and control in order to explain differences in the occurrence and utilization of copper material, and the revelation of differences to culture and environment at this time horizon.

Accurate knowledge of the distribution of important categories of artifacts would seem to be essential for any analysis of resource utilization and goods transmission during prehistoric times. Unfortunately, broad generalizations are often all that have been made concerning prehistoric movements of commodities and their role in cultural diversity and development. In the case of copper products, no systematic attempt has previously been made to ascertain which styles are indicative of particular time or culture periods, or if differential concentrations or relations to particular environments occurred.

In order to obtain precise and controlled data for understanding these questions of developmental and external relations, only material found in primary archeological context were considered in this study. The available information on chronology is summarized in this chapter with a discussion of the artifacts and a summmary of the research. In Chapter II attention is focused on the analyses of some observed variations in copper distributions. The frequency distributions

[3] Melvin L. Fowler and Howard Winters, **Modoc Rock Shelter Preliminary Report** (Illinois State Museum: Report of Investigations, No. 4; Springfield: State of Illinois, 1956), p. 39.

obtained are amenable to specific types of statistical analyses, both associational and spatial. The associational analyses attempt to show relationships of attribute classes, i. e., the degree of association or variation among sites, regions, classes of artifacts, or groupings of artifacts. The spatial analysis attempts to show relationships of dispersion, i. e., the degree of concentration, either in relation to a focal point or to a known or postulated area of significance. The primary objective of these analyses is to ascertain only the most general variations in the distribution patterns of copper in Archaic times. The final chapter presents some broader views of the problems of commodity dispersal and regionalization, and some new questions and hypotheses are offered concerning the probable routes of transmission and the probable role of culture in the distribution and differential utilization of copper.

The Late Archaic Time Period

The most interesting feature of the Late Archaic period is the archeological evidence of rapid and dramatic changes in the cutural content of the eastern portion of the North American continent. One of the distinctive developments of the earliest manifestations of the Late Archaic era is the appearance of a copper-working technology and the dispersion of copper products over great distances. The first culture complexes to include copper formed part of a widespread Laurentian or Laurentian-like tradition which extended from New York through all the states and provinces bordering the shores of the Great Lakes. In Wisconsin and Michigan these complexes are called "Old Copper." [4]

During the closing phase of the Late Archaic period (sometimes considered part of a Transitional period) the rate of change and development increased. [5] Two aspects of these changes have important consequences for the dispersal of copper. First, many new forms of copper artifacts appear.

[4] James B. Griffin, "Some Prehistoric Connections between Siberia and America," Science, CXXXI, No. 3403 (March 18, 1960), pp. 811-812.

[5] The terms "Archaic" and "Late Archaic" are used as customary chronological and "culture-complex" markers and not as developmental terms.

Secondly, there is an apparent beginning of more complex patterns of social organization, particularly in the area south of the Great Lakes. The Great Lake region subsequently assumed less importance as a center of dispersal and cultural development. It is within this Transitional period that a hiatus in the Great Lakes excavational record offers a practical time limit for this study, for the task of separating or distinguishing a site on the basis of its orientation to a Late Archaic or an Early Woodland cultural setting is often difficult. The exclusion of the final phases of the Transitional period reduces the scope of the investigation and may increase the likelihood of missing some significant aspect of shifts in copper diffusion or copper dispersal still oriented toward the Great Lakes culture complexes. This possible shortcoming is unavoidable.

The most current estimates of the age and relationship of selected Archaic and Woodland culture complexes are shown in Figure 1. One concept that cannot be represented adequately in this type of figure is the degree of overlap and sharing of culture traits among the culture complexes.[6] The progress made in relative and absolute dating of sites and culture groups of higher and more encompassing character since the emergence of radiocarbon dating, has led to major revisions in the position and span of culture periods, usually by increasing each time period. The most important or critical sites in this study, those Great Lakes sites known for their Archaic copper artifacts, have yielded radiocarbon age determinations covering a considerable time span. To the extent that these dates are consistent with the archeological data, the identification of the Archaic in the Great Lakes supports the chronological position of the associated styles of copper artifacts. The term "Copper Archaic" for this time interval appears to be justified for the purposes of this study. Table 1 gives the published dates that pertain to the Copper Archaic sites. The dates in the first section range from 890

[6] **Ibid.**, p. 803. Fig. 1 follows the plan presented by Griffin in his chronology chart. A more elaborate charge of the relative chronology of eastern prehistoric culture complexes is presented in **Archeology of Eastern United States**, ed. James B. Griffin (Chicago: University of Chicago Press, 1952), Fig. 205.

Dating AD/BC	Age	Era	Manitoba Minnesota	Wisconsin	Michigan	Illinois	Indiana	Ohio	Southern Ontario	New York
500	1500		Anderson Laurel			Late Hopewell		Late Hopewell		Point Peninsula III
1	2000	EARLY WOODLAND		Hopewell	Hopewell		Hopewell	Hopewell Adena		
						Early Hopewell				Point Peninsula II
500	2500			Early Woodland	Early Woodland			Adena	Middlesex	Middlesex
						Early Woodland				Orient
1000	3000	TRANSITIONAL	Larter	Red Ocher					Point Peninsula I	Point Peninsula I
				and	Andrews Complex		Red Ocher			Brewerton
1500	3500	LATE ARCHAIC	White Shell	"Late" Old Copper	Glacial Kame	Red Ocher	Glacial Kame	Glacial Kame	Glacial Kame	
2000	4000		Minnesota Woman	Old Copper	Old Copper			Raisch-Smith	Laurentian	Laurentian
2500	4500									Lamoka

Fig. 1.--Chronology of prehistoric complexes in the Great Lakes region, ca. 500 A.D. to ca. 2500 B.C.

to 2010 B. C. By including the largest standard deviation for the extreme ends of the period, the time span for the Copper Archaic phase is about 1,500 years (830 to 2345 B. C.). The second section lists dates of Middle Archaic range. The Oconto dates are controversial and are presented here with this qualification in mind, since no attempt is made to assess their validity. The third section contains a date which is wholly inconsistent with the archeological evidence.

FIG. 1

TABLE 1. — Radiocarbon Dates from Copper Archaic Sites

Location	Number [a]	Age
Late Archaic Dates		
Inverhuron, Ontario	S-60	av. 891 - 60 B. C. [b]
Klunk Mound No. 7, Illinois	M-1160	908 - 75
Oberlander No. 2, New York	C-192 [c]	av. 998 - 170
Isle Royale copper pit	M-320	1045 - 170
Riverside Cemetery, Michigan	M-658	1083 - 150
Andrews, Michigan [d]	M-659	1211 - 150
Osceola, Wisconsin	M-643	1942 - 125
Reigh, Wisconsin	M-644	1702 - 125
Isle Royale copper pit	W291) [f]	1355 - 200
Isle Royale copper pit	M371 [e])	1845 - 250
Feeheley, Michigan	M-1139	1970 - 150
Frontenac Island, New York	Y - 459	2012 - 80
Middle Archaic Dates		
Modoc Rock Shelter, Illinois	C-899 & C-900[c]	av. 3659-165
Oconto, Wisconsin [e]	C-836 [c]	3647-600
Oconto, Wisconsin [e]	C-837 & C-839[c]	av. 5557-600
Inconsistent Date		
Muskalonge Lake, New York		650 - 250 A. D.

[a] All dates except M-1139 and M-1160 are listed in the article by Arthur J. Jelinek, "An Index of Radiocarbon Dates Associated with Cultural Materials," **Current Anthropology**, III, No. 5, December, 1962, pp. 451-77.

[b] All C-14 dates include one standard deviation. University of Michigan dates are published as two standard deviations.

[c] The less accurate solid-carbon counting technique was used.

[d] Sample M - 941 from this site is from a pre - copper component (about 3341 - 300 B. C.).

[e] Recent publications and personal communications dispute the connection between copper and the dated material.

[f] Same wood sample used.

Distribution of Sites

Although no previous work has been designed specifically to show dispersal of Archaic copper artifacts, several authors have contributed to the subject. Griffin has suggested approximate limits for "Old Copper" artifacts;[7] Cunningham has summarized the available information on Glacial Kame sites;[8] Ritchie has summarized the results of excavations on Brewerton and Point Peninsula I sites,[9] and Ritzenthaler and Quimby have analyzed material from Red Ocher finds.[10] The extent of these complexes, as conceived by these authors, is illustrated in Figure 2.[11]

It appears that the dispersal of Archaic copper was organized primarily around the Great Lakes and secondarily around the streams and lakes that drain the lands adjacent to the Great Lakes. In Figure 3 the loci of Copper Archaic sites are plotted, and in Table 2 the locations of these sites are summarized.

Typology of Late Archaic Copper Artifacts

In a paper devoted largely to geographic themes, the use of a new "typology" or classification was an essential first step or "stage" in ordering the data. The reason is threefold: First there is no previous copper classification based upon artifacts found in primary archeological context, that is, in association with artifacts which can "date" the copper items.

---

[7] James B. Griffin, ed., **Lake Superior Copper and the Indians: Miscellaneous Studies of Great Lakes Prehistory** (Museum of Anthropology: Anthropological Papers, No. 17; Ann Arbor: University of Michigan, 1961).

[8] Wilbur M. Cunningham, **A Study of the Glacial Kame Culture in Michigan, Ohio, and Indiana** (Museum of Anthropology: Occasional contributions, No. 12; Ann Arbor: University of Michigan, 1948).

[9] William A. Ritchie, **The Pre-Iroquoian Occupations of New York State** (Museum Memoir, No. 1; Rochester: Rochester Museum of Arts and Sciences, 1944).

[10] Robert E. Ritzenthaler and George I Quimby, "The Red Ocher Culture of the Upper Great Lakes and Adjacent Areas," **Fieldiana: Anthropology**, XXXVI, No. 11 (March 27, 1962), pp. 266-271.

[11] The small amount of copper found in Kentucky in an Archaic context is not adequate for consideration and analysis in this study. The cultural context of the copper material from Manitoba, North Dakota, and Minnesota is not clear, but is likely to be significant when cultural and chronological data becomes available.

TABLE 2. — Copper Archaic Sites and Locations [a]

Site	Locus	Name	Town or Section	Township	County	State	Waterway
1	1	Miner's Point			Aitkin	Minn.	Big Sandy L.
2	2	Osceola	Potosi	Potosi	Grant	Wis.	Grant & Miss. R.
3	3	Grane	Stoughton	Dunkirk	Dane	Wis.	
4	4	Half Day	Half Day	Vernon	Lake	Ill.	Des Plaines R.
5	5	Carey	Milwaukee		Milwaukee	Wis.	
6	6	Blume	Thiensville	Mequon	Ozaukee	Wis.	
7	7	Port Washington	Port Washington	Port Washington	Ozaukee	Wis.	
8	8	Reigh	Algoma	Algoma	Winnebago	Wis.	L. Butte des Mortes of Wolf R.
9	9	Blair	Menasha	Menasha	Winnebago	Wis.	L. Winnebago at Fox R.
10	10	Molash Creek	Section 29	T20N, R25E	Manitowoc	Wis.	Molash C. at L. Mich.
11	11	Wolf River	Shawano	Shawano	Shawano	Wis.	Wolf R.
12	12	Oconto	Oconto	Oconto	Oconto	Wis.	Oconto R. near Green Bay
13	13	Riverside Cemetery	Menominee		Menominee	Mich.	Menominee R. nr. Green Bay
14	13	Menominee	Menominee		Menominee	Mich.	
15	14	Dyer	Dyer		Lake	Ind.	
16	15	Peterson		Tippecanoe	Pulaski	Ind.	
17	16	Sharpsburg	Zenz City	Gibson	Mercer	Ohio	Headwaters of Mississinewa R. & Wabash R.
18	16	Fox	Zenz City	Gibson	Mercer	Ohio	Headwaters of Mississinewa R. & Wabash R.
19	17	Williams	Russells Point	Washington	Logan	Ohio	Miami R. near Indian L.
20	18	Zimmerman	Belle Center	McDonald	Hardin	Ohio	Headwaters of Miami R.
21	18	Ridgeway			Hardin	Ohio	Headwaters of Rush C. of Scioto R.
22	19	Kimmel	Berrien Springs		Berrein	Mich.	St. Joseph R.
23	20	Burch	Coldwater		Branch	Mich.	
24	21	Feeheley			Saginaw	Mich.	
25	22	Andrews			Saginaw	Mich.	
26	23	Hodges	Section 35	T11N, R4E	Saginaw	Mich.	Flint R.
27	24	Inverhuron (early)			Bruce	Ont.	L. Huron
28	24	Inverhuron (late)			Bruce	Ont.	L. Huron
29	25	Blackfriar's Bridge	London		Middlesex	Ont.	
30	26	Weston	Weston	York	York	Ont.	
31	27	Port Hope	Port Hope		Durham	Ont.	L. Ontario
32	28	West Lake		Hallowell	Prince Edward	Ont.	West L.

33	28	Picton	Picton	Hallowell	Prince Edward	Ont.	
34	29	Collins Bay	Kingston			Ont.	L. Ontario
35	30	Les Galops Rapids	Brockville		Leeds	Ont.	St. Lawrence R.
36	31	Muskalonge Lake		Theresa	Jefferson	N. Y.	Indian R.
37	32	Candee	Phoenix		Oswego	N. Y.	Oneida R.
38	33	Vinette		Hastings	Oswego	N. Y.	Oneida R.
39	33	Oberlander No. 1		Hastings	Oswego	N. Y.	Oneida R.
49	33	Oberlander No. 2		Hastings	Oswego	N. Y.	Oneida R.
41	33	Robinson		Cicero	Onondaga	N. Y.	Oneida R.
42	33	Pickens		Cicero	Onondaga	N. Y.	Oneida R.
43	34	Frontenac Island	Union Springs	Springport	Cayuga	N. Y.	Cayuga L.
44	35	Vine Valley	Vine Valley	Middlesex	Yates	N. Y.	Vine Valley C. nr. Canadaigua L.
45	36	Sea Breeze	Sea Breeze Park		Monroe	N. Y.	L. Ontario
46	37	Wray	Wet Rush		Monroe	N. Y.	Genesee R.
47	38	Smoky Hollow	Letchworth Park	Mount Morris	Livingston	N. Y.	Genesee R.
48	39	Starved Rock	Sec. 22, T33N, R2E	Deer Park	LaSalle	Ill.	Illinois R.
49	40	Rench	Peoria		Peoria	Ill.	Illinois R.
50	40	Parker - Jacques	Sections 14 & 16	Township 11	Peoria	Ill.	Illinois R.
51	41	Banner		Banner	Fulton	Ill.	Illinois R.
52	42	Morton Mnd. No. 11	Sec. 31, T5N, R4E	Liverpool	Fulton	Ill.	Coal C. nr. Ill. R.
53	42	Morton Mnd. No. 14	Sec. 31, T5N, R4E	Liverpool	Fulton	Ill.	Coal C. nr. Ill. R.
54	42	Morton Mnd. No. 15	Sec. 31, T5N, R4E	Liverpool	Fulton	Ill.	Coal C. nr. Ill. R.
55	43	Morse	Secs. 18 & 19, T3N, R3E	Kerton	Fulton	Ill.	Illinois R.
56	44	Sugar Creek			Schuyler	Ill.	Sugar C. at Ill. R.
57	45	Hemphill (1898)	Sec. 32, T1S, R1W	Coopertown	Brown	Ill.	Illinois R.
58	45	Hemphill (1933)	Sec. 32, T1S, R1W	Coopertown	Brown	Ill.	Illinois R.
59	45	Hemphill (1838)	Sec. 32, T1S, R1W	Coopertown	Brown	Ill.	Illinois R.
60	46	Kampsville	Sec. 2, T9S, R2W	Crater	Calhoun	Ill.	Illinois R.
61	46	Klunk Mound No. 7	Kampsville	Crater	Calhoun	Ill.	Illinois R.
62	47	Etley	Sec. 10, T10S, R2W	Hardin	Calhoun	Ill.	Illinois R.
63	48	Elm Point	St. Charles	St. Charles	St. Charles	Mo.	E, br. of Dardenne C.
64	49	Modoc Rock Shelter	Sec. 26, T5S, R9W		Randolph	Ill.	Mississippi R.
65	50	Hatten Mound	Sante Fe		Monroe	Iowa	South Fork of Salt R.

[a] For sources, see appendix I.

Secondly, descriptions of copper items in some site reports are so poor that the item in question defies identification. The typology was partly designed to circumvent this inadequacy. Thirdly, many types of copper implements commonly found in other typologies, particularly some knives and projectile points, have never been found in excavated Archaic sites.

In some classes of copper artifacts the total number of specimens was very small while the number of distinguishable

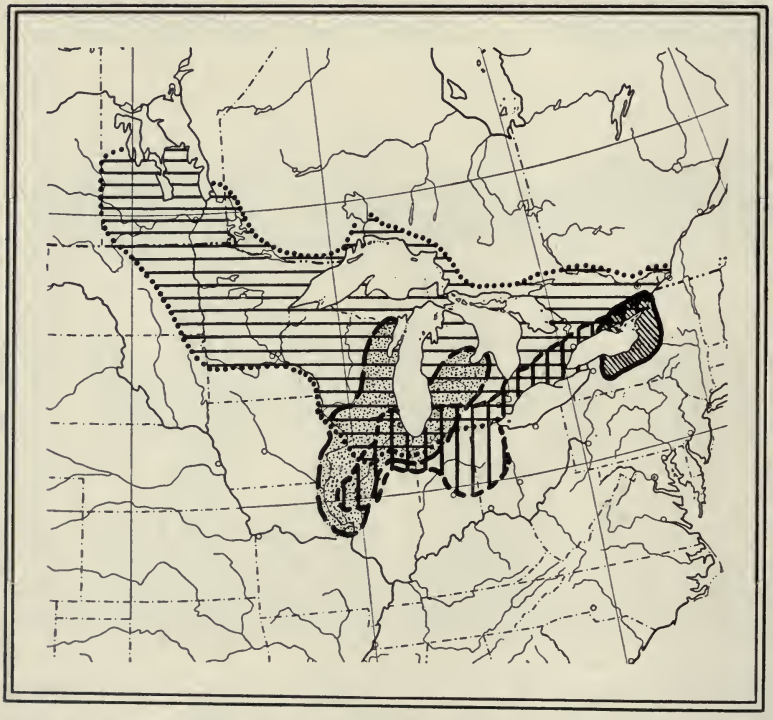

FIG. 2—Approximate range of Copper Archaic complexes in North America according to other authors.

Area of "Old Copper (after Griffin, ed., 1961)

Area of Glacial Kame (after Cunningham, 1948)

Area of Red Ocher (after Ritzenthaler and Quimby, 1962)

Area of Brewerton and Point Peninsula I (after Ritchie, 1944)

varieties was quite large. Since the significance of each variety could not be ascertained from such a small sample, the varieties were grouped into classes which shared a number of more general features. These groupings were given the provisional type designations that are listed in Table 3. One problem of special interest is the occurrence of beads, awls, and celts through an extremely long temporal span.[12] The important general criteria for the type-groupings within each class are summarized below in Table 3.

Class 1 — The projectile points are divided into ten types. While most of the types are very distinct, several types represent groupings of stylistic varieties whose true status cannot be determined from the small sample available for this study. An attempt was made to organize the projectile points into as few type-groupings as possible, because analysis and generalization are extremely difficult with a highly fragmented typology. The projectile point types are illustrated in Figure 4. A few points and harpoons not included in the typology are not illustrated.

Class 2 — The knives are of two similar varieties found in separate sites. Both varieties have straight top edge, blades, and stems.

Class 3 — The crescent knives are two closely related utilitarian styles. The first type occurs at four sites and the second occurs at only one site.

Class 4 — The perforators represent a very common form of copper implement and, as a class, yield enough metrical data to allow a statistical analysis of this class. It was found that the width-to-thickness ratio furnished the only distinct form of segregation. The four clusters form the first four awl types. A fifth type, small awls, was established on the basis of a frequency distribution of the lengths of all specimens. The curve was bimodal, suggesting two distinct types on the basis of length. A normal distribution was obtained for the specimens longer than approximately six centimeters.

Class 5 — Two varieties of spuds, or socketed adzes are in-

[12] John W. Bennett, "The Prehistory of the Northern Mississippi Valley," **Archeology of Eastern United States**, ed. James B. Griffin (Chicago: University of Chicago Press, 1952), pp. 111-113.

cluded. The first is relatively rare but extensive in distribution, while the second is more abundant but also more localized in occurrence.

Class 6 — The celts and related forms were divided on the basis of an assumed functional relationship among shape, size, cross section, and condition of the edges. Generally, the dimensions of the celt forms were good indexes of type.

Class 7 — The fishing implements are divided into fishhooks and gorges. The difference between gorges and very small awls (Type 4F) is not clear. Some writers have labeled this form as a gorge and others as an awl. Small awls or gorges are not included in the analyses in Chapter II.

Class 8 — The beads are divided into the very general categories illustrated in Figure 5. They are the most widely distributed of all copper artifacts of the Late Archaic period. In spite of this wide occurrence beads have seldom received more attention than a mere acknowledgment in most site reports. It is therefore very difficult to determine stylistic variations in form or in the manner of stringing and they are not incuuded in the analysis in Chapter II.

Class 9 — The ornaments represent generalized groups because most specimens appear to be highly individualistic. This applies mainly to the crescental and circular types. Ornaments other than beads seem to have limited distributions.

Some of the copper artifacts seem to be material substitutes for other types of materials. The most widely occurring types of artifacts of this nature are plummets, barbed harpoons, and convexo-rectanguloid gorgets. These items are commonly made of stone, bone, and shell, respectively. Only one copper plummet, one copper harpoon, two copper convexo-rectanguloid gorgets have ever been found in primary archeological contexts.[13] Unique items in the site literature were not included in the typology. These are listed in Table 4. In only one site do copper stains on neck and skull bones

[13] In some instances, the notes and collections of individuals and institutions have been useful in questions of typology. I wish to thank Lewis R. Binford, Robert J. Hruska, Dan Morse, Neil Ostberg, Albert C. Spaulding, David W. Taggart, and Warren L. Wittry for permission to use unpublished material.

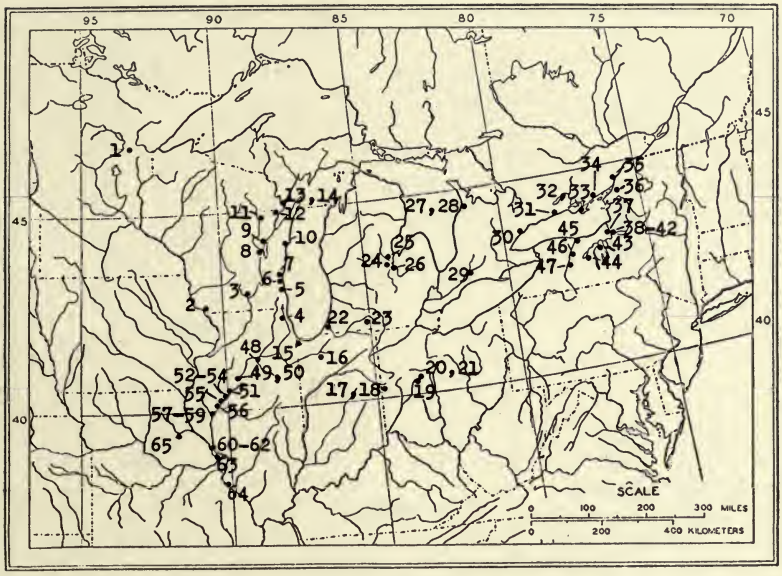

FIG. 3.—Index map to Copper Archaic sites.

attest to the former presence of copper beads. In a few other sites, the copper fragments are too meager to permit identification of a specific artifact. Only a small percentage of the sites have been systematically excavated, and the remainder are usually single burial features encountered accidentally in farming or mining operations.

Terms such as "copper artifact population," which are used in the next chapter, refer to all types of copper artifacts except Type 4F (small awls), Type 7B (fish gorges), and Types 8A, B, and C (beads). In many site reports the descriptions are too vague to give credence to such functional designations as "small awls" and "fish gorges." In other reports the presence of small awls or fish gorges is suggested, but no information is offered on quantity or size. Beads are often inadequately reported or described, and it is often im-

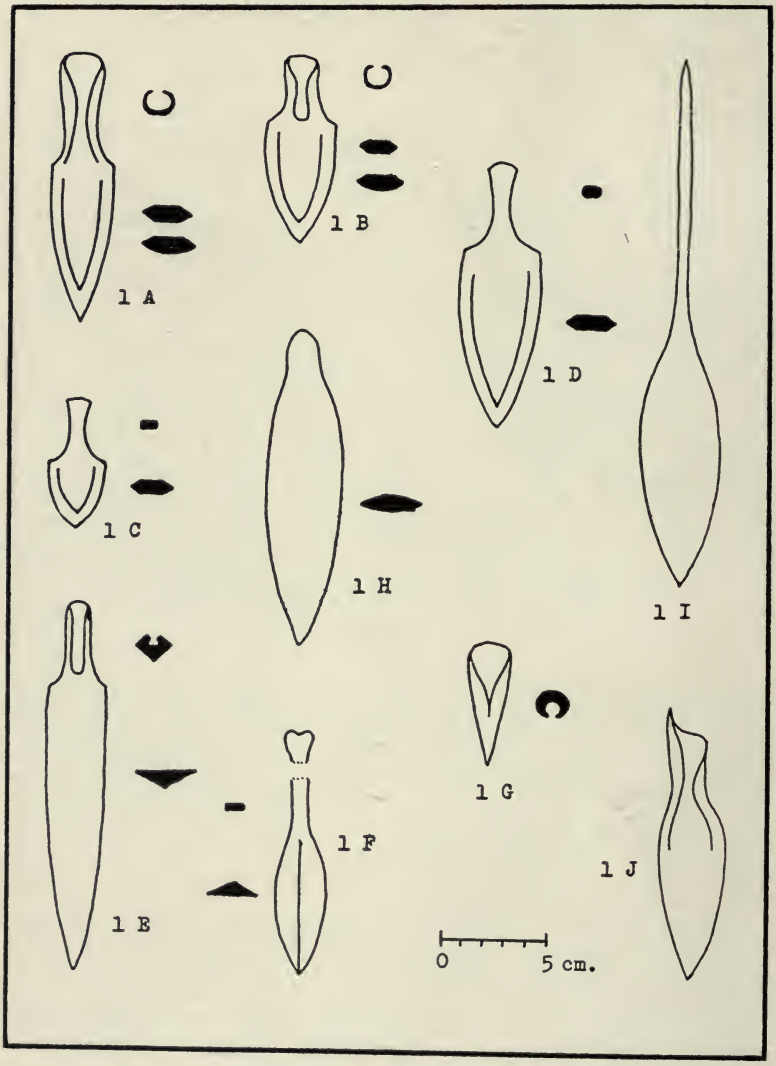

FIG. 4.—Types of projectile points.

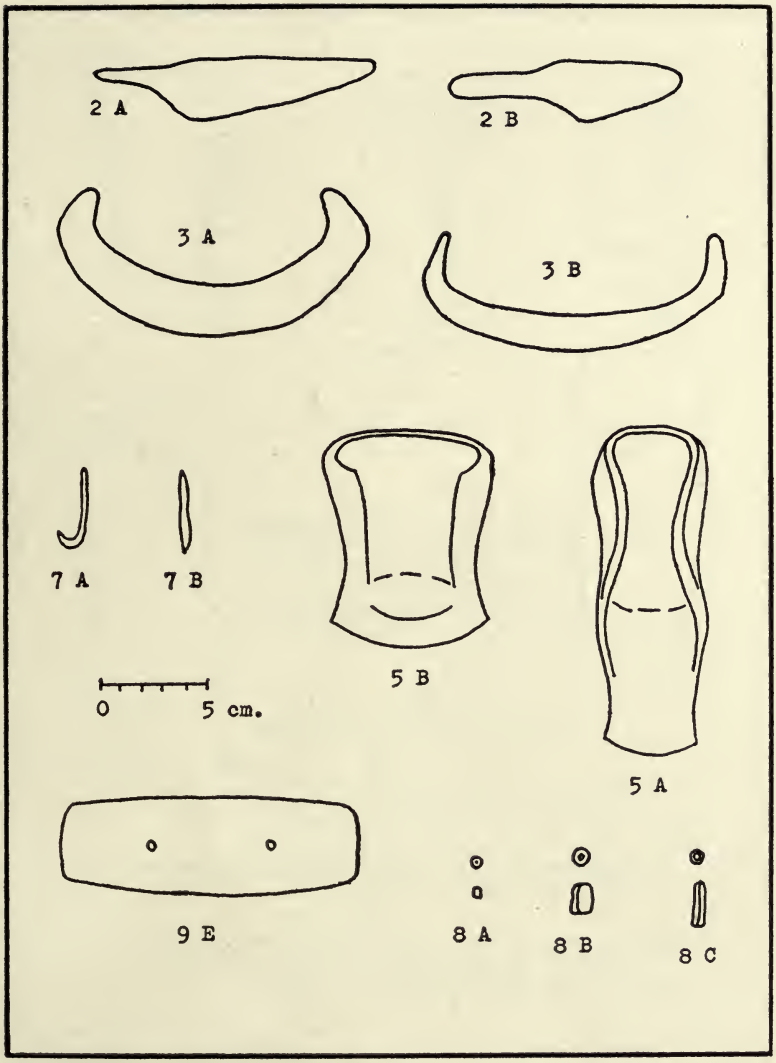

FIG. 5.—Types of knives, crescent knives (ulos), spuds (socketed adzes), and some ornaments.

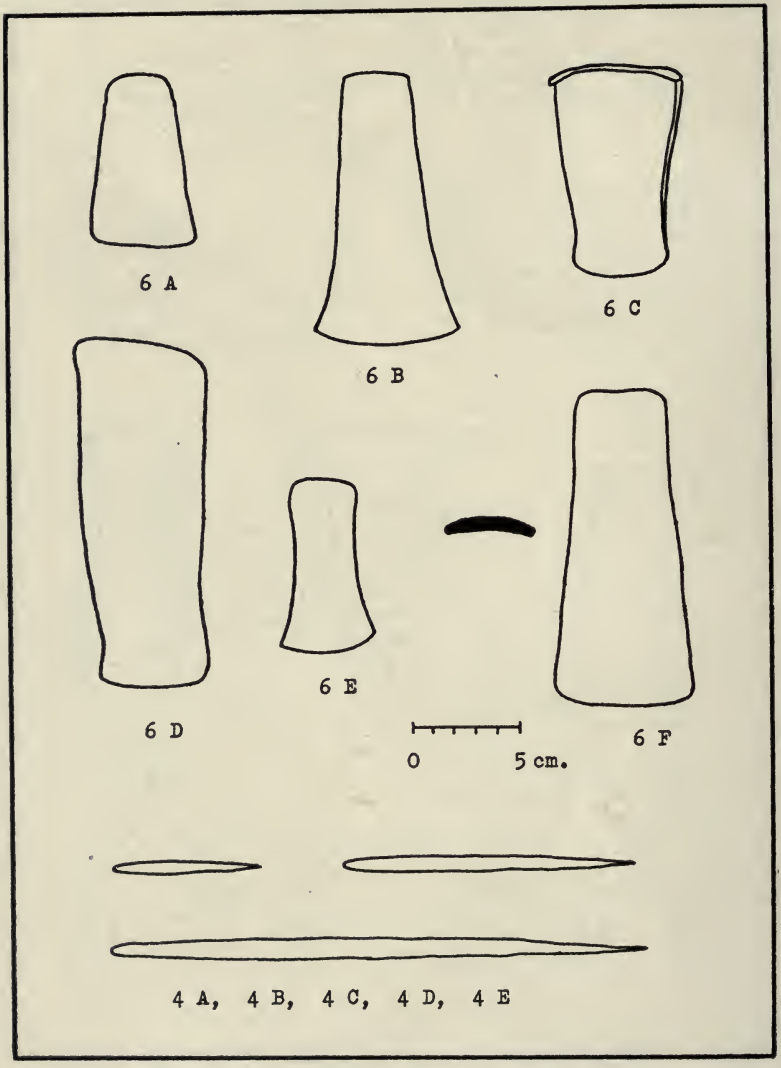

Fig. 6.—Types of celts and related forms and awls.

TABLE 3 — Types of Copper Artifacts

es	Description				Wittry Typology
— Projectile Points					
	Blade		Stem		
oss-section	Length	Cross-section		Length	
veled	long	socketed		long	I - J
veled	long	socketed		short	I - J
veled	short	flat		long	I - I
veled	long	flat		long	I - I
lged	long	socketed		short	I - A1 & A2
lged	long	flat			I - H
nical - pointed		circular			I - N
t	long	flat		short	I - K (?)
at	short	rat-tailed		long	I - C
t	long	socketed		long	
— Knives					
igh type					II - A1
ceola type					II - D
— Crescent Knives					
igh type (Blair type I)					III - A
air type II					III - A
— Perforators					
uare awls	(Cross-section ratio—1.000 to 1.267)				IV - A & B
ctanguloid awls	(cross-section ratio—1.333 to 1.6666)				IV - A & B (?)
ctangular awls	(cross-section—2.154 to 2.667)				IV - B
t awls	(cross-section ratio—3.333)				IV - C (?)
kes	(width greater than 1.2 cm.)				IV - E
all awls	(any cross-section, very short lengths)				
edles					IV - D
— Spuds					
igh type	(wedge bit, long socket)				V - C
ceola type	(blunt bit, antler-butt socket)				V - D
— Celts and Related Forms					
all celts	(non-symmetrical shape; flat bit; biconvex transverse cross-section)				VI - C
g celts	(symmetrical shape; expanding, convex bit; biconvex transverse cross-section)				VI - C
dges	(contracting bit; hammered butt)				VI - G
g axes	(non-symmetrical shape; flat bit; long blade)				
ncave axes	(symmetrical biconcave shape; slightly expanding bit; thin cross-section)				VI - F
zes	(tends to rectangular shape; flat bit; concavo-convex transverse cross-section)				VI - J
— Fishing Implements					
hhooks					VII - A
rges					VII - B
— Beads					
all, fine beads (under 3 mm. diameter)					X
edium to large barrel-shaped beads					X
g, thin tubular beads (length over 3 times diameter)					X
— Other Ornamental Forms					
escents					IX - (?)
gs and circular pendants					
sps					
g tubes					
ctangular gorgets					

possible to give a weighted numerical value to beads when making frequency counts of artifacts. To include these items in the calculations of the following chapter would distort the conclusions considerably. Table 5 is a tabulation of the "copper artifact sample" by site. The group of distribution maps that follow these tables show the location of the major classes of copper artifacts.

TABLE 4. — List of unique specimens

Site	Class	Item
Reigh	?	Celt-shaped item with parallel-sided, longitudinal cross-section (pendant?)
Reigh	9	Headband ornaments
Reigh	?	Rivet
Oconto	?	Spatula shapes
Oconto	9	Bracelet
Oconto	9	Spirally-rolled tube
Oconto	9	Pendant
Oconto	1	Projectile point with missing stem
Oconto	1	Double-pointed projectile point
Riverside	1	One-barbed socketed harpoon
Menominee	6	Chisel
Feeheley	6	Small celt with long, awl-like tang
Feeheley	6	Small, thin, rectangular celt
Andrews	1	Four-barbed harpoon
Ridgeway	9	Punctated plate
Les Galops Rapids	1	Very long beveled, socketed projectile point
Les Galops Rapids	1	Long, ridged projectile point with plain stem
Les Galops Rapids	1	Long, flat projectile point with plain stem
Les Galops Rapids	1	Short, beveled projectile point with plain point
Muskalonge Lake	-	Flaking tool (?)
Oberlander No. 1	6	Chisel fragment
Frontenac Island	?	Foliated fragment
Starved Rock	1	"Plainview" type point
Elm Point	?	Plummet
Morse	9	Bi-concave two-holed gorget
Hatten Mound	?	Foliated fragment

TABLE 5

Tabulation of Late Archaic Copper Artifacts[a]

Site Number[b]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
Bead	1	9	55			3	4	2	33	17		2	1	24	28	10	4		1			1	2	2	12	4		1			1	1	7		5	1 3		1	1		2		1 1	1			1	1		3		3	1	1	1	3	2	10	1	3		4	1	1 4		1 1
Awl																																																																									
Gorge																																																																				

[a]For beads, small awls, and gorges, see Appendix I.

[b]See Table 2 for site names.

Fig. 7.—Distribution of projectile points (Class 1).

Fig. 8.—Distribution of knives (Class 2 = -) and crescent knives -- (Class 3 = o).

Fig. 9.—Distribution of awls and pikes (Class 4).

Fig. 10—Distribution of celts and adzes (Class 6) and spuds (Class 5).

Fig. 11.—Distribution of very small awls-fish gorges (4F, 7B = .) and fish hooks (7A = o).

Fig. 12.—Distribution of beads (Class 8).

CHAPTER II

ANALYSES OF DISTRIBUTION

Regional Variations

A preliminary inspection of the data given in Chapter I suggests that it is possible to test for real variations in copper artifact frequencies between spatial and temporal isolates. On the basis of spatial proximity of sites, four regions have been constructed. These regions are delimited in Figure 14 and the artifact and site frequencies for each region are listed in Table 6. Table 7 shows copper bead frequencies. These data suggest that regional variations are significant. They may also verify previous publications concerned with the very high density of Archaic copper artifacts in Wisconsin (Region I).

Chi-square tests were made to indicate whether the observed frequencies in a distribution differ significantly from the frequencies that might be expected according to some assumed hypothesis. The question is whether the calculated value of chi-square is sufficiently great to refute a Null Hypothesis that the observed discrepancy between the actual frequency and the expected frequency could have arisen by

Fig. 13.—Distribution of ornaments (Class 9).

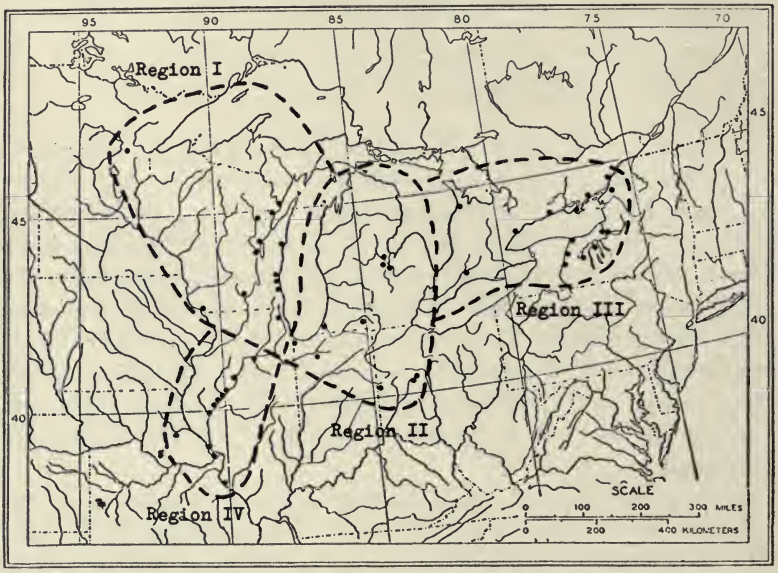

Fig. 14.—Regional delimitation of sites (see Appendix I for list of sites within each region).

chance.[14] The frequency distribution of classes of copper artifacts for each region is shown in Table 8 and the computations for chi-square are shown in Table 9.

The calculations shown in Table 9 indicate that there is a probability of only one in a thousand that the observed distribution could have arisen by chance (that is, less than the 0.001 level of significance), and that the differences are not simply a function of sampling vagaries. Therefore the Null Hypothesis is rejected. It is most likely that the same magnitude of suggested difference would be obtained regardless of the way regions were defined, since Wisconsin maintains relative proportions of about 2:1 over the other territories combined in all classes of copper artifacts except celts and adzes. This suggests that functional correlation between regions and classes of artifacts are controlled by cultural and or environmental factors.

[14] M. J. Moroney, **Facts from Figures** (3rd ed. rev.; Baltimore: Penquin Books, Inc., 1960), pp. 249-250.

TABLE 6.--Frequencies of artifacts and loci in four regions

Regions	Loci		Artifacts		Average
	Number	Percentage	Number	Percentage	
I	11	29.73	188	67.87	17.09
II	7	18.92	27	9.75	3.86
III	10	27.03	26	9.39	2.60
IV	9	24.32	38	13.00	4.00
Total	37	100.00	279	100.01	7.49

TABLE 7.--Frequencies of beads and loci in four regions

Regions	Loci		Beads		Average
	Number	Percentage	Number	Percentage	
I	8	25.81	695	23.13	86.88
II	9	29.03	1220	40.60	135.56
III	8	25.81	700	23.29	87.50
IV	6	19.35	390	12.98	65.00
Total	31	100.00	3005	100.00	96.94

TABLE 8.--Frequency distribution for groups of artifact classes within four regions

Types	Regions				Total
	I	II	III	IV	
Projectile points (1)	71	2	5	4	82
Knives and ulos (2 & 3)	20	..	..	..	20
Awls (4)	57	10	2	11	80
Spuds and celts (5 & 6)	15	11	15	15	56
Ornaments (9)	18	4	..	3	25
Total	181	27	22	33	263

Comparison of Samples

The distribution frequency of Region I can be tested for comparability with Wittry's study of copper distribution in Wisconsin.[15] By limiting this analysis to those varieties of

[15] Warren L. Wittry, "A Preliminary Study of the Old Copper Culture" (unpublished B. A. thesis, Dept. of Anthropology, University of Wisconsin, 1950). This study is an analysis of the Henry P. Hamilton collection at the State Historical Society of Wisconsin Museum in Madison. This is probably the largest collection of Archaic copper artifacts in the world.

[16] See Table 3 for a list of the copper artifact types and their equivalent in the Wittry typology.

TABLE 9.--Chi-square computations for 4 x 5 contingency table

Cell	O	E	E_c (Yates Correction)	$O - E_c$	$(O - E_c)^2$	$\frac{(O - E_c)^2}{E_c}$
I 1	71	56.43	56.93	14.07	197.96	3.48
II 1	2	8.42	7.92	5.92	35.05	4.43
III 1	5	6.86	7.36	2.36	5.57	0.76
IV 1	4	10.29	10.79	6.79	46.10	4.27
I 2 & 3	20	13.76	14.26	5.74	39.95	2.80
II 2 & 3	..	2.05	1.55	1.55	2.40	1.55
III 2 & 3	..	1.67	1.17	1.17	1.37	1.17
IV 2 & 3	..	2.51	2.01	2.01	4.04	2.01
I 4	57	55.06	55.56	1.44	2.07	1.43
II 4	10	8.21	8.71	1.29	1.66	0.19
III 4	2	6.69	6.19	4.19	17.56	2.84
IV 4	11	10.04	10.64	0.36	0.13	0.01
I 5 & 6	15	38.54	38.04	23.04	530.84	13.95
II 5 & 6	11	5.75	6.25	4.75	22.56	3.61
III 5 & 6	15	4.68	5.18	9.82	96.43	18.62
IV 5 & 6	15	7.03	7.53	7.47	55.80	7.41
I 9	18	17.21	17.71	0.29	0.08	0.00
II 9	4	2.57	3.07	0.93	0.86	0.28
III 9	..	2.09	1.59	1.59	2.53	1.59
IV 9	3	3.14	2.64	0.36	0.13	0.05
Total	263				x^2 =	70.45

Degrees of freedom = 12

P = .001 at 32.91
P < .001 level of significance

artifacts found in cultural association, it may be assumed that the relative proportions of copper artifact types in the two studies are the same as that obtained by the Late Archaic population, and that no real difference should be suggested by a chi-square test.[16] The contingency table and the computations for chi-square are presented in Tables 10 and 11, respectively.

The chi-square test indicates that there is a significant difference between the two samples. The probability of the observed differences between samples being simply the result of sampling vagaries is less than the 0.001 level of significance. This result suggests that surface-collected and site-collected materials may not be strictly comparable for measuring distribution or dispersal of copper artifacts and possible ecological or cultural correlates. The difference, however, may be explained as a bias on the part of the collector or the collecting process. This hypothesis appears justified because

TABLE 10.--Frequency of comparable types of copper artifacts from the Hamilton Collection and from sites in Wisconsin

Types	Hamilton Collection	Wisconsin Sites	Total
Projectile points (1)	290	64	354
Knives and ulos (2 & 3)	78	20	98
Awls (4)	112	58	170
Spuds and celts (5 & 6)	73	15	88
Total	553	157	710

TABLE 11.--Chi-square computations for 2 x 4 contingency table

Cell	O	E	O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
H - 1	64	78.28	14.28	203.92	2.619
W - 1	290	275.73	14.27	203.63	0.753
H - 2 & 3	20	21.67	1.67	2.79	0.130
W - 2 & 3	78	76.34	1.66	2.76	0.038
H - 4	58	37.59	20.41	416.57	11.102
W - 4	112	132.41	20.41	416.57	3.166
H - 5 & 6	15	10.46	4.46	19.89	1.027
W - 5 & 6	73	68.55	4.45	19.80	0.293
Total	710				$X^2 = 19.128$

Degrees of freedom = 3 $P = 0.001$ at 16.268
$P < 0.001$

the only class of copper artifacts that deviates substantially from a 4:1 ratio between the two samples is the awl class, the least impressive-looking of the copper artifact classes, that is, the class having the least value or interest to a farmer or an Indian-relic collector. [17]

Dispersion

The possibility that distance from a central region or focus is a major factor in dispersion of copper artifacts of the Late Archaic period, regardless of culture complex, time, or particular adaptions to environmental situations, may now be considered. Two alternatives are possible as a center for

[17] A chi-square test of a revised frequency distribution (100 awls added to the Hamilton collection shows no significant difference between site-collected and surface-collected samples.

measuring distances.[18] The first is the Keweenaw Peninsula, because this area can be assumed to be the center of mining activity (see Figure 15). The second alternative is the area near the junction of the Menominee River and Green Bay. This is one center of abundant copper artifacts, at least for a late phase of the Late Archaic, and it is located on the most direct water route from the Keweenaw Peninsula into Wisconsin.[19] This area is assumed to have been an important nucleus of manufacturing activity (see Figure 16). Table 12 shows the copper artifact frequency for each 100 miles interval from the postulated centers.

The dramatic drop in frequency which occurs in the second interval from either center is unexpected, and Wittry's study of surface-collected artifacts of Wisconsin contradicts the present results. Wittry's distribution shows a relatively even coverage in Wisconsin for the first two segments (actually about 60 per cent - 40 per cent in favor of the first 100 miles).[20] It is reasonable to assume that, until more sites are excavated in Wisconsin, surface collections are better indicators of dispersion.

The last three distance intervals from either center show a markedly strong contrast to the first three distance intervals.[21] The ratio of copper artifacts is exceptionally constant.

---

[18] A preliminary calculation of the center of gravity for the non-bead copper artifact population was made by placing a "50 x 50 mile" grid over the Great Lake area. The calculation center of gravity was in eastern Michigan. This result suggests that a sizeable quantity of artifacts in the east shifts the center in that direction. However, the limited evidence (about 300 artifacts) is not sufficient for the use of many techniques in spatial statistics, such as this one, or for valid conclusions based on such techniques.

[19] Fall River to Sturgeon River to Michigamme River - Menominee River. See Wilbert B. Hinsdale, **Archeological Atlas of Michigan.** (University Museums: Michigan Handbook Series, No. 4; Ann Arbor: University of Michigan, 1931.)

[20] **Ibid.**, Map 2.

[21] The 0-100 mile segment for the Keweenaw center is disregarded for this comparison because of the lack of information concerning Archaic occupation in Upper Michigan and the absence of reported sites.

	First 3 Intervals	Last 3 Intervals
Keweenaw Peninsula center	216	51
Menominee River - Green Bay Center	214	53

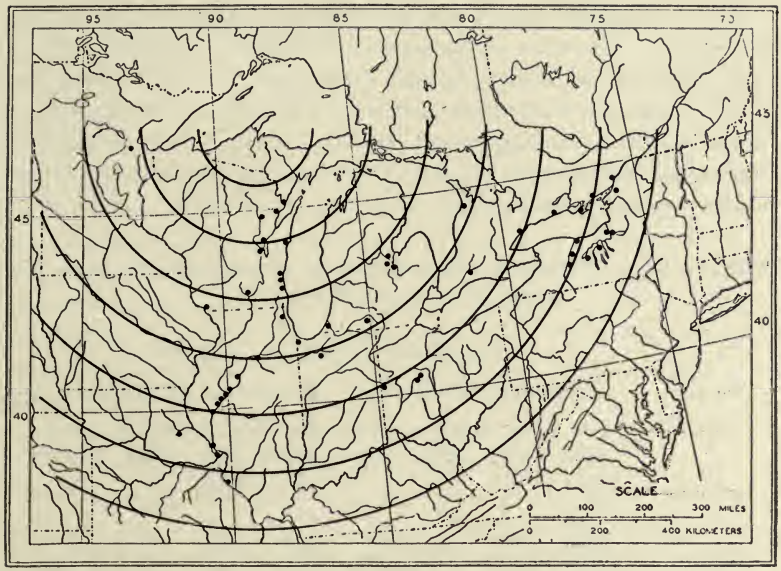

Fig. 15.—Distance in 100-mile intervals from Keweenaw Peninsula mining center (see Appendix I for list of sites within each interval).

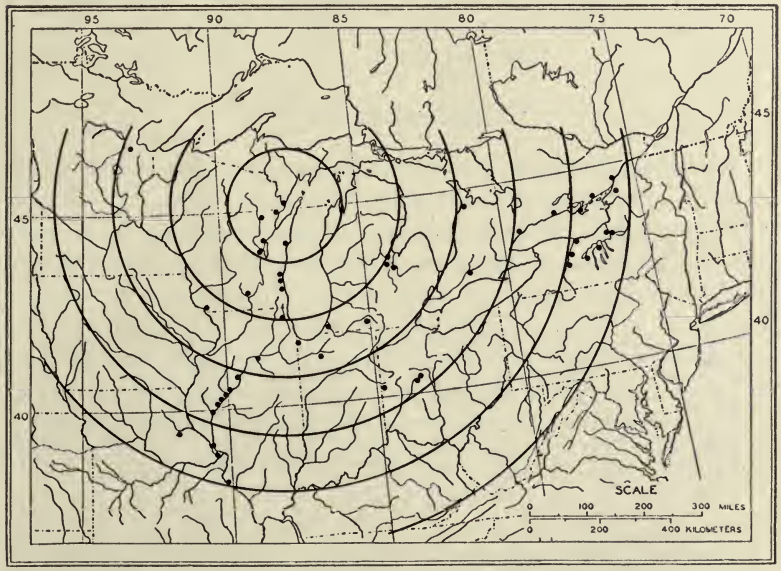

Fig. 16.—Distance in 100-mile intervals from Riverside Cemetery at Menominee River-Green Bay (see Appendix I for list of sites within each interval).

Table 12 suggests that an important breaking point occurs somewhere between approximately 250 and 350 miles from the Menominee River - Green Bay center or 350 and 450 miles from the Keweenaw center. This central high density area includes the important Michigan sites and potentially important Minnesota locations. Even Wittry's distribution study agrees substantially with this conclusion. [22]

TABLE 12. — Frequency distribution of copper artifacts with distance from postulated centers.

Distance Interval	Postulated Centers of Dispersal							
	Keeweenaw Peninsula				Menominee River-Green Bay			
	Distance (mi.)	No. of Artifacts	No. of Sites	Frequency	Distance (mi.)	No. of Artifacts	No. of Sites	Frequency
0	0-100	0	0	0	--	--	--	--
1	1-200	80	5	16.00	0-100	115	7	16.43
2	2-300	53	6	8.83	1-200	9	3	3.00
3	3-400	83	8	10.38	2-300	89	7	12.71
4	4-500	18	6	3.00	3-400	22	9	2.44
5	5-600	21	9	2.33	4-500	12	6	2.00
6	6-700	14	6	2.33	5-600	22	8	2.75
Total		269	40	(6.725)		269	40	(6.725)

Temporal Variations

The Late Archaic period as delimited in this paper spans a 1500 year period when major changes in archeological content occurred. Within this broad time spectrum it is very likely that some cultural or ecological changes may be reflected in the temporal and spatial distribution of copper artifacts as well as stylistic changes in the artifacts. To establish whether such shifts occurred, the Late Archaic was divided into three phases, each phase characterized by at least one well-excavated site. [23] All other sites were assigned on the basis of cultural traits to the time phase to which they

[22] The strongest break comes at approximately 200 miles from the Menominee River - Green Bay center. No evidence is available for the distance in Michigan and Minnesota where this break would occur (map 2 in Wittry's B. A. paper).

[23] Most of the type sites have C-14 age determinations.

bore the closest cutural and or temporal resemblance. [24] Copper artifacts were excluded from this evaluation except in two or three minor instances where other cultural material was meager.

It was assumed at first that all the Late Archaic dates were approximately correct (see Table 1). Unfortunately, two important sites in Wisconsin have radiocarbon dates which in my opinion, appear to disagree with the major portion of the archeological evidence. These two sites, Osceola and Reigh, are assigned to time phases without regard to their published radiocarbon dates. [25] The phases are: Late (2800-3100 years ago), middle (3150-3550 years ago), and early (3600-4100 years ago).

In Table 13 the time phases have been plotted against sites (components) and in Table 14 against artifacts per distance-unit and region. If there are no major errors in the assignment of sites (components) or artifacts to a particular time phase, the results are instructive. The chi-square computations of Table 15 suggest that the distribution is not a consequence of sampling vagaries.

For the early phase, no site occurs in Wisconsin or Illinois, yet Lower Michigan, Ohio, Southern Ontario, and Western New York appear to have been areas of moderate copper artifact density. For the middle phase, Wisconsin assumes the most prominent position, and copper is moderately dense in Lower Michigan and Southern Ontario. For the late phase, Wisconsin has continued to increase its use of copper, New York has decreased its use, and Illinois has entered prominently into copper utilization for the first time.

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[24] I wish to thank Lewis R. Binford, Department of Anthropology at the University of Chicago for help in assigning several of the sites to particular time phases. During the collection of information on copper, it was impossible to take thorough notes on all the cultural evidence of temporal position. Mr. Binford's notes and personal acquaintance with the material were extremely helpful in substantiating or correcting my impressions of the archeological reports and materials.

[25] It is an interesting conincidence that the two radiocarbon dates which are rejected here, Osceola: M-643 and Reigh: M-644, were run in sequence at the same laboratory. I estimate the age of these components are about 400 years and 300 years younger respectively.

Even a brief inspection of Table 14 illustrates the dramatic shift in artifact density and utilization. Wisconsin appears to have had a late development in copper working, but developed a more elaborate tradition, probably related to its closeness to the source of raw material and the interchange of ideas with groups in other areas who valued the metal. Possibly, a more efficient adaption to environment permitted increased population densities and utilization of copper. The presence of other exotic materials also suggests this type of change. Peoples in Michigan, Indiana, and Ohio appear to have particpated from the earliest phase and only in the late phase to have reduced their use of the metal. Ontario and New York appear to have had a similar fate. It is possible that the appearance of a more elaborate Illinois culture as

TABLE 13. — Frequency of loci in three phases of the Copper Archaic period.

	Loci [a]											
						Distance from Keweenaw Peninsula						
Time	Region					(2) 1-200	(3) 2-300	(4) 3-400	(5) 4-500	(6) 5-600	(7) 6-700	
Phase	I	II	III	IV	Total							Total
Late	4	--	5	10	19	2	1	2	6	6	2	19
Middle	9	6	3	--	18	2	6	7	1	0	2	18
Early	--	4	9	--	13	--	--	1	2	7	3	13
Unassigned	--	--	--	2	2	--	--	1	--	--	1	2
Total	13	10	17	12	52	4	7	11	9	13	8	52

[a] Loci include sites with beads and small awls as well as sites with other copper artifacts. Table computed from Appendix I.

TABLE 14. — Frequency of copper artifacts in three phases of the Copper Archaic period.

	Artifacts [a]											
						Distance from Keweenaw Peninsula						
Time	Region					(2) 1-200	(3) 2-300	(4) 3-400	(5) 4-500	(6) 5-600	(7) 6-700	
Phase	I	II	III	IV	Total							Total
Late	112	--	3	36	151	55	2	56	26	10	2	151
Middle	76	13	9	--	98	25	51	14	--	--	8	98
Early	--	14	14	--	28	--	--	12	1	11	4	28
Total	188	27	26	36	277	80	53	82	27	21	14	277

[a] Artifacts exclude beads, small awls, and fish gorges.

TABLE 15.--Chi-square computations for 3 x 4 contingency table

Cell		O	E	E_c (Yates Correction)	$O - E_c$	$(O - E_c)^2$	$\frac{(O - E_c)^2}{E_c}$
Late	I	112	102.48	102.98	9.02	81.36	0.790
Late	II	0	14.72	14.22	14.22	202.21	14.220
Late	III	3	14.17	13.67	10.67	113.85	8.382
Late	IV	36	19.62	20.12	15.88	252.17	12.533
Middle	I	76	66.51	67.01	8.99	80.82	1.206
Middle	II	13	9.55	10.05	2.95	8.70	0.865
Middle	III	9	9.20	9.00	0.00	0.00	0.000
Middle	IV	0	12.74	12.24	12.24	149.82	12.240
Early	I	0	19.00	18.50	18.50	342.25	18.500
Early	II	14	2.73	3.23	10.77	115.99	39.911
Early	III	14	2.63	3.13	10.87	118.16	37.749
Early	IV	0	3.64	3.14	3.14	9.86	3.140
Total		277					$\chi^2 = 135.640$

Degrees of freedom = 6

P = .001 at 22.457
P < .001 level of significance

an important user of copper at the same time that some sites in Wisconsin [26] also show more complex traits reflects some of the cultural changes that are later recognized as Early Woodland (900 B. C. - 300 B. C.). [27] Influences from the area south of the Great Lakes started a shift in copper distribution and utilization which coincides with a decline of the Great Lakes area as the center of important cultural developments. [28]

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[26] The Riverside Cemetery site on the Menominee River is the best example.

[27] In fact, these very late, Late Archaic sites are often called "Early Woodland without pottery."

[28] James B. Griffin, "Post-Glacial Ecology and Culture Changes in the Great Lakes Area of North America," **Great Lakes Research Division, Publication No. 7,** (Institute of Science and Technology; Ann Arbor: University of Michigan, 1961).

CHAPTER III

COPPER DISPERSAL AS EVIDENCE OF CULTURAL CHANGE

Regional Differentiation

The primary approach to this study involved compiling the attributes of copper artifacts found in an Archaic archeological context. Popham and Emerson state that

> The importance of artifacts from primary archeological association lies chiefly in the fact that it enables a number of different types of artifacts to be classed together in space and time. In other words, it provides direct evidence of a cultural cohesion which would necessarily remain presumptive if only collections of isolated artifacts were available. [29]

Beyond this procedure it was impossible to determine in advance which associated data were directly relevant to an analysis of copper dispersal without a previous distribution study to serve as a model.

Had an attempt been made to control or utilize other information, it is possible that a more reliable estimate of copper dispersal could have been obtained. One type of information which would add further control to the study is now apparent. Since almost all the copper was recovered from burial features, a ratio of the number of copper artifacts to the number of burial features from each site would measure the relative prevalence of copper within local communities. Such ratios could be compared and analyzed on local, regional, or temporal bases. Provided that enough sites were large excavation units, some measure of expectation for the small, partially worked sites could then be derived. Although the utility of such a device remains to be demonstrated, without it the most detailed measure of prevalency expectation is at a subregional or regional level. It may be of some use to consider several implications for further research based on observations and impressions that cannot be substantiated at this time.

The distribution of projectile points coincides closely with the overall distribution of Archaic copper with the exception

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[29] Robert E. Popham and J. N. Emerson, "Manifestations of the Old Copper Industry in Ontario," **Pennsylvania Archaeologist,** XXIV, No. 1 (May, 1954), p. 5.

of celt and adze forms. Projectile points appear to be highly concentrated in Wisconsin with secondary concentrations in Minnesota, Upper Michigan, and Ontario whereas celts and adzes appear to be used during the earlier phases of the Late Archaic in eastern Lower Michigan, eastern Ontario, and western New York; and in the later phases in western New York, Wisconsin, and Illinois. The tendency for celts and adzes to occur in the more distant reaches of copper distribution is striking.

An explanation for the late spatial shift of celts to the south, the long period of celt and adze utilization in the east, and the retention of projectile point dominance by Wisconsin must be sought. Since large projectile points occurred throughout the northern area, it seems likely that big-game hunting, that is, the exploitation of a forest fauna, is a better explanation for projectile point dominance in the north than the occurrence of a particular culture complex. Their use as hunting tools might also account for the absence of several varieties of projectile points in Archaic context. One particular variety of common occurrence (Wittry's type IB) is suggested as an Early Woodland style functioning in the same utilitarian manner.

The celt and adze forms that occur in Michigan, eastern Ontario, and western New York share many attributes. This similarity is further evidence of strong cultural ties and the similar development of Laurentian and Point Peninsula foci in the eastern range of the Great Lakes.

The late, but dramatic, development of copper utilization, particularly celt and adze forms, in the Illinois area suggests a new cultural influence on the older, established network of copper dispersal. The earliest hint of this occurred when the first, so-called "Old Copper Culture" site was discovered near Osceola, Wisconsin, at the junction of the Grant and Mississippi Rivers. The number of copper and stone tools which this site shares with southern Illinois sites of the Late Archaic phase is unquestionable evidence of a major shift of influence at the close of the Late Archaic period. The rapid development of pre-Black Sands - Early Woodland in the lower Illinois area and possibly the Early Woodland - Early Adena in the Indiana-Ohio area exercised increasing

pressures for the diversion of copper in their direction.

Routes of Dispersal

It is apparent that the abundance of copper in the Lake Superior area was a necessary condition for its exploitation by Late Archaic peoples. The dispersal of copper was similar to that of many other restricted resources in that the center or centers of production and utilization occur at some distance from the source of the raw material. In fact, such long-distance movements of raw materials, and finished artifacts were so common in Late Archaic, Early Woodland, and Middle Woodland times that cultural change and development may have been a partial consequence of inter-regional communication and trade. The pattern of copper dispersal is significantly different from that of most restricted resources by virtue of its early use and the evidence of movement of both raw material and finished products. Further, the difference in regional utilization during the three postulated phases of the Late Archaic suggests that the original development of the copper industry may have occurred some distance east of the later and better-known Wisconsin centers. This communication was doubtless facilitated by the network of lakes and streams.

If the shortest and most likely routes between the sources of raw copper and the final places of utilization are plotted on a map, they coincide with manay of the routes recorded by the earliest white explorers. Obviously, these routes have great antiquity and deserve consideration as avenues of communication and diffusion as well as "trade" routes in Late Archaic times. It follows that the Indians of four thousand years ago possessed the means to transport, canoes, to make long journeys. In the last section of Chapter II, it was shown that copper was utilized in different regions in varying degrees during the three postulated phases of the Late Archaic period. Figures 17, 18, and 19 illustrate the variation in quantity and direction of copper movement during this period.

Little evidence is available to suggest the nature of the Early Woodland pressure on copper dispersal — whether trade, social exchange, conquest, direct mining expeditions, or a combination of these. The occurrence of some types of

celts in the more distant eastern and southern part of the area strongly suggests the movement of raw material. The handful of specifically "Wisconsin" style artifacts appearing in Illinois and Ontario can be attributed as easily to social or non-commercial exchange, such as "gifts between equals," bride-exchange, etc. There is much room for conjecture on the economic and social nature of the exchange mechanisms. The appearance of marine shell from the Gulf of Mexico and white flint from Southern Illinois in Wisconsin sites gives us additional evidence of long-distance exchange. The external relationships of the Wisconsin peoples who used great quantities of copper during the Transitional Period, when copper was also appearing in large quantities in Illinois, can only be conjectured. The area in the north was by no means stagnating at this time or in Early and Middle Woodland times. Such prolific sites as Killarney Bay 1 and the McCollum Cache show continued and more elaborate development of copper work. This area was under strong Early Woodland influence (Point Peninsula II) from the east, but even more

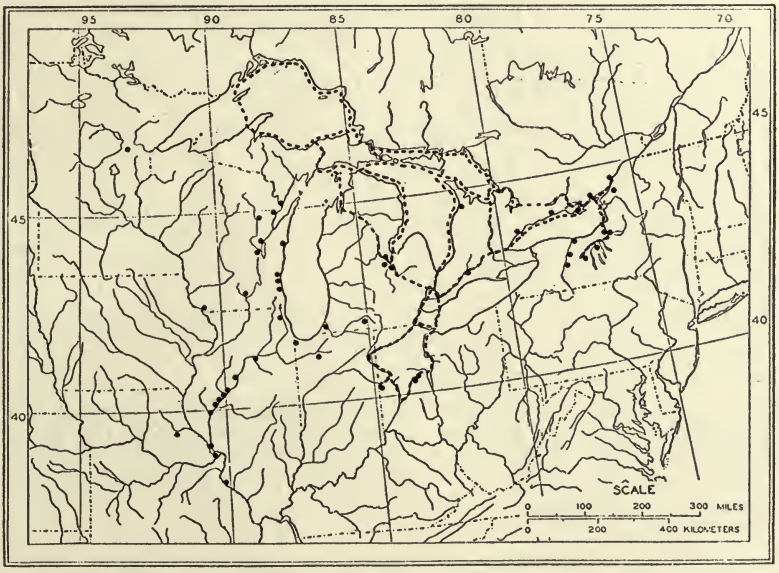

Fig. 17.—Possible transmission routes showing relative volume of copper flow in the early phase of the Late Archaic period, CA. 3600 to 4100 years ago (volume: - - - - small, —— medium, ___ large).

pervasive Middle Woodland (Hopewellian) influence from the south — probably the outstanding period of exotic and long-distance trade in North America.

The analysis of the data largely confirms the theories and interpretations that have already been developed by archeologists to explain the cultural affiliations of the Archaic Copper complexes. Two important exceptions to the interpretations of other authors on the origins and developments of the Archaic copper industry have been suggested in this paper. The first is the possibility that Laurentian groups of the eastern Great Lakes were the most important users of copper in the early Late Archaic (2000 B. C.) and influenced

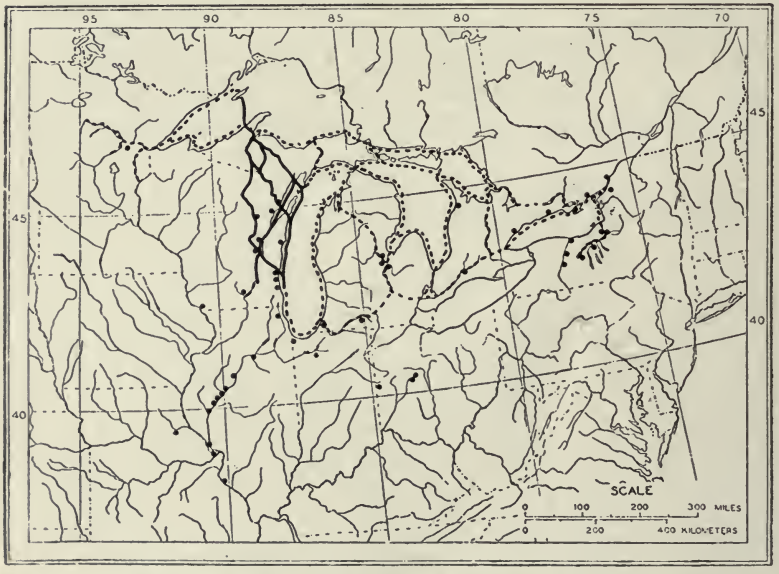

Fig. 18.—Possible transmission routes showing relative volume of copper flow in the middle phase of the Late Archaic period, CA. 3150 to 3550 years ago (volume: - - - - small, —— medium, ___ large).

the later development of the copper industry in Wisconsin. The second is the possibility that Late Archaic cultural influences in the area to the south of the Great Lakes affected the dispersal of copper as well as the styles of artifacts by the late Late Archaic (1200 B. C.) in the Great Lakes area. More detailed and comprehensive distributional studies of several exotic materials and products will be required before the relative importance of internal and external influence on cultural change can be demonstrated. In more general terms this study suggests that the distribution of copper in the Late Archaic period reflects an extremely complex pattern of cultural inter-relationships and environmental influences amongst and upon the culture groups living in the Great Lakes region.

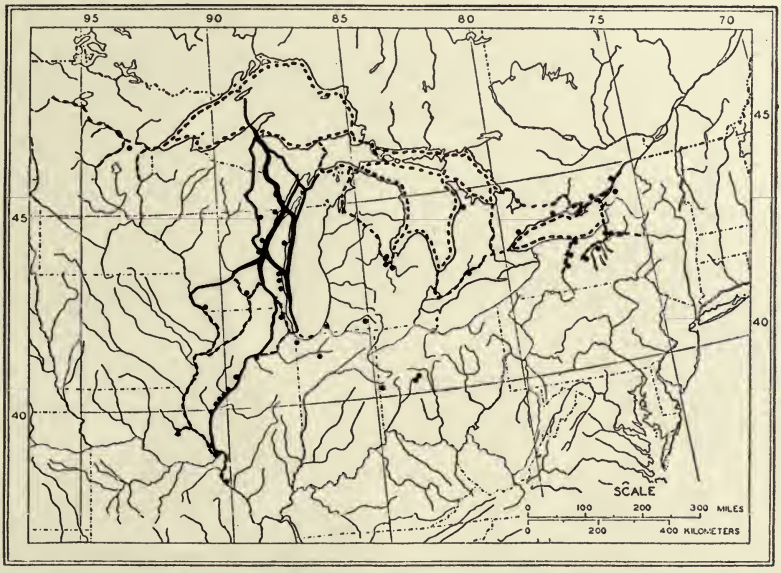

Fig. 19.—Possible transmission routes showing relative volume of copper flow in the late phase of the Late Archaic period, CA. 2800 to 3100 years ago (volume: - - - - small, —— medium, ___ large).

APPENDIX I

SUMMARY OF CLASSIFICATIONS USED IN CHAPTER I, A LIST OF UNTABULATED ARTIFACTS, AND REFERENCES

No.	Site	Additional Copper Artifacts[a] 4F	7B	8A	8B	8C	Distance Region[b]	Keweenaw Pens.[c]	Riverside Cemetery[d]	Time Phase[e]	Reference[f]
1	Miner's Point	8					I	3	3	B	Miner, 1941
2	Osceola	1	3			2	I	4	3	A	Ritzenthaler & Scholz, 1946; Whaley collection
3	Grane				90		I	3	2	B	Ritzenthaler & Quimby, 1962
4	Half Day				x		I	4	2	B	Ritzenthaler & Quimby, 1962
5	Carey				50	3	I	3	2	B	Ritzenthaler & Quimby, 1962
6	Blume				2	2	I	3	2	B	Ritzenthaler & Quimby, 1962
7	Port Washington						I	3	2	B	Ritzenthaler & Quimby, 1962
8	Reigh			x	20		I	3	1	B	Baerreis, Daifuku & Lundsted, 1954; Ritzenthaler, et al., 1956
9	Blair						I	2	1	A	Wisconsin Historical Society Museum
10	Molash Creek			64	48		I	3	1	A	Ritzenthaler & Quimby, 1962
11	Wolf River						I	2	1	B	Ritzenthaler & Quimby, 1962
12	Oconto						I	2	1	B	Ritzenthaler & Wittry, 1952
13	Riverside Cemetery	1	?	200	200		I	2	1	A	Museum of Anthropology, Univ. of Michigan; Oshkosh Public Museum
14	Menominee						I	2	1	A	Quimby, 1957
15	Dyer				45		II	4	3	B	Ritzenthaler & Quimby, 1962
16	Peterson				x		II	5	3	B	Ritzenthaler & Quimby, 1962
17	Sharpsburg						II	6	4	C	Cunningham, 1948
18	Fox				x		II	6	4	C	Cunningham, 1948
19	Williams				15		II	6	4	C	Baby (pers. comm.) 1962
20	Zimmerman				144		II	6	4	C	Cunningham, 1948
21	Ridgeway				x		II	6	4	C	Cunningham, 1948
22	Kimmel				33		II	4	3	B	Ritzenthaler & Quimby, 1962
23	Burch				17		II	4	3	B	Cunningham, 1948
24	Feeheley				902		II	4	3	C	Taggart, 1962 (unpublished)
25	Andrews	?30		37	3	5	II	4	3	B	Museum of Anthropology, University of Michigan

28	Inverhuron (Late)						III	4	4	A	Kenyon, 1959
29	Blackfriar's Bridge				1		III	5	4	C	Ritchie, 1949
30	Weston				x		III	5	5	C	Ritchie, 1949
31	Port Hope						III	6	5	C	Ritchie, 1949
32	West Lake				100		III	6	6	C	Ritchie, 1949
33	Picton			230	240	3	III	6	6	C	Ritchie, 1949
34	Collins Bay				x		III	6	6	C	Ritchie, 1955
35	Les Galops Rapids						III	7	6	B	Griffin, ed. 1961
36	Muskalonge Lake			2	1		III	7	6	B	Ritchie, 1955
37	Candee	?					III	7	6	C	Ritchie, 1940
38	Vinette						III	7	6	A	Ritchie, 1944
39	Oberlander #1	23	10				III	7	6	C	Ritchie, 1940
40	Oberlander #2	2					III	7	6	A	Ritchie, 1944
41	Robinson	12	8				III	7	6	C	Ritchie, 1940
42	Pickens					5	III	7	6	A	Ritchie, 1944
43	Frontenac Island	?5					III	7	6	C	Ritchie, 1944
44	Vine Valley						III	7	6	A	Ritchie, 1944
45	Sea Breeze	?1			80	5	III	6	6	A	Ritchie, 1944
46	Wray					23	III	6	6	A	Ritchie, 1944
47	Smoky Hollow	1					III	6	6	C	Ritchie, 1944
48	Starved Rock						IV	4	3	-	Mayer-Oakes, 1951
49	Rench				13		IV	5	4	A	Morse, 1959
50	Parker-Jacques Mds.				3	8	IV	5	4	A	Morse, 1959
51	Banner				27		IV	5	4	A	Ritzenthaler & Quimby, 1962
52	Morton Mound #11				14		IV	5	4	A	Cole & Deuel, 1937
53	Morton Mound #14				6	1	IV	5	4	A	Cole & Deuel, 1937
54	Morton Mound #15						IV	5	4	A	Cole & Deuel, 1937
55	Morse				4	4	IV	5	4	A	Ritzenthaler & Quimby, 1962; Morse (pers. comm.) 1963
56	Sugar Creek						IV	5	4	A	Cunningham, 1948
57	Hemphill (1898)				180		IV	5	4	A	Griffin, 1941
58	Hemphill (1933)				2		IV	5	4	A	Titterington, 1950
59	Hemphill (1938)				120		IV	5	4	A	Titterington, 1950
60	Kampsville						IV	6	5	A	Titterington, 1950
61	Klunk Mound #7	1			x		IV	6	5	A	Perino, 1961
62	Etley						IV	6	5	A	Titterington, 1950
63	Elm Point						IV	6	5	A	Perino, 1961
64	Modoc Rock Shelter	1					IV	7	5	-	Fowler & Winters, 1956
65	Hatten Mound						IV	6	5	A	Henning (pers. comm.) 1962

[a]See Table 5 for tabulated copper artifacts. [b]See Figure 14. [c]See Figure 15. [d]See Figure 16.

[e]A=Late, B=Middle, C=Early. [f]References listed are most recent or complete source.

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ANOTHER RADIOCARBON DATE FOR AZTALAN

Robert Ritzenthaler

A bottle-shaped refuse pit in the northeastern corner of the village site of Aztalan excavated in 1960 by members of the Milwaukee Public Museum consisting of Stephan F. Borhegyi, Director, Lee Parsons, Associate Curator of Anthropology, and William Hurley, student assistant, under the field directorship of Dr. Chandler Rowe, Lawrence College, yielded a restorable Middle Mississippi pottery vessel and charcoal. The charcoal sample M-1214 run by the University of Michigan Memorial-Phoenix Project under the direction of H. R. Crane resulted in the date of 580 plus or minus 100 years ago. Taking into consideration the possible error of 100 years this gives us a spread of 1283 A. D. to 1483 A. D.

To my mind this is the most "agreeable" date thus far obtained for Aztalan. The two other dates for Aztalan are 760 A. D. and 1640 A. D. (Wisconsin Archeologist Vol. 42, No. 3, p. 139).

MEMBERSHIP IN THE SOCIETY FOR AMERICAN ARCHAEOLOGY

As a member of a regional archaeological society, you are well aware that the prehistoric Indian cultures did not respect present state boundaries. In fact, increasingly broader connections are being demonstrated between distant areas of the New World and between the continents as research progresses. To keep abreast of the broadening horizons of New World archaeology we suggest that you join the Society for American Archaeology.

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(1) a quarterly journal, **American Antiquity,** containing over 600 pages of abundantly illustrated articles and reviews on all phases of New World prehistory;

(2) **Abstracts of New World Archaeology,** an annual publication listing and abstracting articles and books in all media pertaining to New World archaeology; and,

(3) occasional **Memoirs** issued intermittantly (but our Editor, Dr. T. N. Campbell, has promised several for the coming year).

All of these are provided to our members for their annual dues of $8.00 per year. To be perfectly fair, our dues will be raised to $10.00 per year after the present year. But this is the year to join the Society and give it a trial at the present low rate. This is also the time to join since the first number of the new volume of **American Antiquity** appears in July. Send your check or money order for $8.00 to our Secretary, Dr. Joe Ben Wheat, University of Colorado Museum, Boulder, Colorado.

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Although a recent issue of THE BOOKSHELF was largely devoted to current studies on Iowa archaeology, this number will also turn to a report on that state. While the publication is a recent one, the work is not new since it consists of the report of Ellison Orr on his archaeological excavations and surveys primarily conducted between 1934 and 1939 under the supervision of Dr. Charles R. Keyes. This was doubtless the period of most intensive archaeological work conducted in Iowa and although more systematic investigations have been carried on since then, an understanding of the early work is essential for any scholar particularly since many of these sites can no longer be restudied. Mr. Orr's reports have been available in manuscript form and many recent reports have drawn from them but they now can be consulted without making a costly trip to Iowa through the use of the Microcard edition, ARCHIVES OF ARCHAEOLOGY No. 20, published jointly by the Society for American Archaeology and the University of Wisconsin Press. Since our readers may not be familiar with Microcards, or indeed with this publication series, a brief description of the process is given. So far as the specific publication by Ellison Orr is concerned, attention is here primarily focussed upon the contents of particular relevance to Wisconsin archaeology. The precise title of the publication in question is: Ellison Orr, **Iowa Archaeological Reports 1934-1939.** With an Evaluation and Index by Marshall McKusick. Ten Volumes. ARCHIVES OF ARCHAEOLOGY, No. 20, 1963. The reports consist of 1702 pages of text, maps and illustrations, and the entire publication may be ordered for $17.50 from The University of Wisconsin Press, 430 Sterling Court, Madison 6, Wisconsin, or individual volumes for $2.00 each or the Introduction and Evaluation for $1.00.

In 1960 the Society for American Archaeology entered into a co-operative agreement with the University of Wisconsin Press to publish a series of reports under the name ARCHIVES OF ARCHAEOLOGY, the twenty-second number of the series being now in press. An important consideration that served at a rationale for the establishment of the new series was the feeling that much primary excavation and descriptive information pertaining to particular sites that was needed by at least a small number of scholars was not being published because of the expense involved. A case in point, of course, is the results of the work of Ellison Orr which has rested in manuscript form for some twenty-four years since its completion. Microcard publication is ideally designed for a situation where the demand for the publication is limited to a relatively small number of copies. While the reader might well feel that he must pay as much as a conventionally printed publication would cost, the saving operates in terms of production costs. No publishing firm could afford to produce a small edition of say fifty copies, which may be all that is needed, to be distributed at this price since the sales would return only a small fraction of his original costs.

Microcards are produced by a photographic process, the original text being reproduced on a negative and the publication as distributed to the reader consisting of a positive print approximately three by five inches in size and printed on both sides of a card. The cameras used for the copying work are such that permit a reduction in the page size of the original text so that 36 to 48 pages of typed or printed text and illustrations (6 x 9 or 8½ by 11 inches) can be reproduced on a single side of the card. While it is this reduction in page size that permits economical publication in this format, it does mean that a person desiring to make use of the Microcard publications must have available a reader that will again enlarge the page size to its original or a convenient size. Such Microcard readers, similar in conception to the more familiar microfilm readers though with a different optical system, project the image on a ground glass screen. Microcards can be read with a powerful hand lens or with a microscope but such devices are not suited for extensive reading. Small, inexpensive pocket-size readers have been produced but these too are

not satisfactory for continuous close reading. Thus the present use of Microcards is largely limited to consultation in libraries or at institutions that can afford a good reader selling for around $300, an investment that not many individual scholars will make unless more publications he needs are available in this format than he will presently find in most fields. For convenience in locating and filing cards, each card bears the author, title and card number in a heading legible to the naked eye at the top. Saving in space is also a feature that must be mentioned in connection with a discussion of Microcards. In ARCHIVES OF ARCHAEOLOGY where a total of 90 pages is printed on the front and back of a card, 6,000 pages of print can be filed in one inch of space in a three by five filing drawer. Readers interested in further details on the nature of the series will find a discussion in **American Antiquity,** Volume 25, No. 4, pages 623 through 625 (April, 1960) and all recent numbers of this journal contain a listing of titles available and their cost. In a recent survey made of the use of Microcards, one member of the Society of American Archaeology expressed his opposition to the series because he could not read the publications in bed, a situation where he caught up on most of his peripheral reading. It is true this is a limitation, but if we are to be guided solely by such a criterion we would have to eliminate many publications including our unabridged dictionaries. Extended reviews of Microcard publications serve to inform us whether consultation of the publication is necessary. Ideal summaries of the work should be written for publication in conventional journal media by the author, but this could not be done so far as the present publication is concerned.

So much for background; let us now turn to the reports of Ellison Orr. The Orr reports as published on Microcard contain one addition not found in the manuscript volumes, the Evaluation and Index prepared by Dr. Marshall McKusick of the State University of Iowa. To place the materials in proper perspective, Dr. McKusick has given us a brief account of the work of both Ellison Orr and Dr. Charles R. Keyes who, in addition to his other scholarly interests, was for many years Director of the Iowa Archaeological Survey

for the Iowa State Historical Society. McKusick has also prepared a resume of recent archaeological work based on the Orr excavations and indicated where the original reports are still of primary value. Although Mr. Orr had prepared an individual index for each bound volume, Dr. McKusick has gone far beyond this and prepared a comprehensive index for the entire publication. He has, in addition, added to the descriptive names of the sites the trinominal state-county-site designation currently in use in Iowa archaeological investigations. This introductory section not only facilitates the use of the Microcard publication; it also enables us to place the material in proper scientific perspective. We are, of course, basically indebted to Dr. McKusick for making the publication available on Microcard since it was through his initiative that the issuance was arranged.

A few words should be drawn from Dr. McKusick's sketch of Ellison Orr so that we might better appreciate his work. He was born in a log cabin at McGregor, Iowa, in the year 1857 and spent much of his early life farming and teaching school in Allamakee County. Orr moved to Waukon, Iowa, in 1904 and managed the local telephone company until his retirement in 1930. Although he had been interested in local antiquities through these many years he then, when he was 73 years of age, decided to devote his full attention to archaeological investigations. Through his friendship with Dr. Charles R. Keyes this became an even more active interest for from 1934 to 1939 he acted as field supervisor on excavations and surveys in various parts of Iowa financed by the WPA. Though 77 to 82 years of age during this period, he vigorously pursued the field work and during the winter months wrote the bulk of the reports that are included in the publication. During the last year of his life, at the age of 93, Orr was instrumental in forming the Iowa Archaeological Society. He was also a key figure in the establishment of the Effigy Mounds National Monument and had deposited his own copies of his manuscript reports in the Library of the Monument. It was from this set, through the cooperation of the Superintendent of the Monument, that the Microcard publication was copied.

Orr's manuscripts were bound in twelve volumes. Volume

seven, an autobiography, is not included in the Microcard publication and Volume nine, comprising various historical papers, is also excluded from the series. However, the original numbering and pagination of the volumes is retained so that the omission of these two volumes should be noted by the users of the publication. Although the copying of the text was largely done from the original manuscript, an occasional page thought to be unreadable on Microcard was retyped. The manuscript also included several large charts whose format is such that they could be used only with great difficulty on Microcard. These tables were reorganized and typed and the additional pages that resulted from this numbered 50A, 50B, 50C, etc., so as to not disturb the original pagination of the volume. The manuscript volumes contain numerous photographic illustrations of varying quality and scientific value. Although it was realized that many of these would not produce satisfactorily on Microcard, all pages were nevertheless copied. It was felt that the reproduction of the entire series would indicate to the scholar, particularly through the captions on the photographs, what was available in the bound volumes at McGregor where they could be consulted if it was felt that they might clarify an obscure point in the text.

Perhaps the most substantial work described in the publication is the excavation of sites of the Mill Creek and Glenwood cultures of western Iowa. Since the connections of these manifestations with Wisconsin prehistory are but indirect, we are more concerned here with reviewing the investigations in sites of more easterly location even though the quantity of materials recovered are not as impressive as the other work cited.

The High Bank Site, Crawford County, Wisconsin

Volume 6, pp. 1-16, of the Orr publication contains a description of a Wisconsin site, a Woodland campsite in Crawford County. Since the report itself is brief and of direct interest to Wisconsin readers, the text is given below. It does serve to illustrate the character of Orr's descriptive work and his concern with the interpretation of features that might aid in the understanding of a particular site. The title of his short article, which he states is a copy of one deposited

in the Iowa State Historical Society, is "An Apparently Very Old Prehistoric Camp Site."

"In the summer of 1924 the writer found along the Wisconsin shore of the Mississippi River, during a period of very low water, at a place about two miles south-east of Waukon Junction, Iowa, many small fragments of prehistoric Indian pottery, flint chips and a couple of arrow-heads.

"These had been washed by current and wave action out of the matrix in which they had been imbedded. Only a few pieces were found apparently **in situ** in the clay. The current was of just the right strength to carry away the clay and fine sand leaving behind the slightly heavier material — the relics.

"This locality, a strip of shore about four hundred feet long and six or eight wide, was carefully gone over in 1925 and 1926, resulting in the finding of considerable additional pottery sherds, a quart or more of the chips and flakes, nine additional arrow-heads, parts of what appear to be three small chipped flint celts, a well polished greenstone celt three inches long and one and one-half inches wide at the bitt, and a slightly oval hammer stone of pinkish quartzite.

"The latter had an average diameter of four and one-half inches and was one and three-eights inches thick, with central pits on each side three-eights inches deep. The perimeter showed marks of hammering and had four sizeable pieces broken out, apparently from use in striking hard blows.

"All the material so found, so far as can be determined, came from a stratum of blue, slightly sandy, alluvial clay in which were many ancient crawfish holes, the sides of which were some hardened by iron oxide, and which were entirely filled with clay of a lighter shade of blue.

"Immediately over this relic bearing stratum lies seven feet of blue-black, slightly sandy clay, gradually changing to a granular, lighter, black alluvial soil in which no relics have been found. Over this lies an ash-colored soil, eighteen inches in thickness, the "made land" of the farmers, deposited by floods since the settlement of the country adjacent to the river by white men around seventy-five years ago. This would be at the rate of about one foot in fifty years.

"If the entire thickness of soil over the relic-bearing stratum was deposited at the same rate, then four hundred and fifty years have passed since the material found was lost or left there.

"However it is believed that the sediment laid down before the white man came was deposited very much slower. This belief has been reached by a long and careful study of the alluvial deposits laid down in the lateral valleys of the tributaries in the Mississippi in the driftless area.

"In many of these valleys and for long distances, flood waters have cut ditches down through the alluvial soil and loess to the gravel bars and bed rock, exposing a great number of sections for study In many places there is less than ten feet of alluvial soil between the recent "made land" and the loess below.

"It is the possibility of a very considerable age for these relics that has prompted the writing of this paper.

"Wherever the main channel of the Mississippi makes one of its numerous 'crossings' of the wide flood plain, — over two miles wide at Waukon Junction, — the course is always in a curve diagonally down stream, the current impinging strongly on the down-stream bank and undercutting and washing it away.

"This results in mostly vertical banks on that side known to rivermen as 'high banks'.

"This relic bearing stratum which we have described lies at the foot of a 'High Bank' near the center of the flood plain, on the 'crossing' from Charme, Wisconsin, to the forgotten steamboat landing of Johnsonport, just below Waukon Junction on the Iowa side, and three-fourths of a mile above the mouth of Harper's Channel.

"It is quite likely an old camp site. A diligent search along the shore up and down the river for a half mile each way resulted in neither chips, flakes, pottery, arrow-heads or any other material being found.

"The arrow-heads show only a very ordinary workmanship as can be seen by an inspection of the photographs, and among the flakes are many with a cutting edge on which secondary chipping has been done.

"The pottery sherds are tempered with crushed rotten granite and the pieces so far found show at least ten different patterns of decoration. On account of the smallness of the pieces the shape of the vessels can not even be conjectured, with one exception which is a piece of a straight vertical neck three inches high.

"Future opportunities to collect will undoubtedly yield more material the study of which may enable some definite conclusion to be reached as to culture and age.

"This is likely to be a long drawn out matter as during some summers not a single opportunity to collect may be afforded on account of too high water.

"Waukon, Iowa, Mar. 26th, 1927

"Very much to our regret we must write 'Finis' to our account of finds at the 'High Bank'. What we have written is probably the complete history of this old camping place of the Indian so far as it will ever be revealed to the student of this or any other age.

"This for the reason that during the winter of 1926-27, and the early summer of 1927, the Government, in order to protect the down-stream high bank of the Charme-Johnsonport crossing, first, with a powerful steam shovel cut this bank to a uniform slope of about forty-five degrees, then covered it from below low water mark to the top, and for the entire distance from light No. 766 to the bend below Harper's Channel, with eighteen inches or more of rock rip-rap, thus effectually burying this very interesting hunting ground out of sight for all time.

"And now when the great dams across the Mississippi, built to create a nine foot navigable channel, are completed, as they will be in a couple of years hence, and the water imponded above them, the dam at Guttenberg will raise the water at Waukon Junction, so we are informed, to a permanent level of five feet above the present low water mark, which would, even if the rip-rap were not there, cover the relic bearing stratum at the 'High Bank'.

"Waukon, Iowa, Dec. 8th, 1936."

The paper quoted above is accompanied by a map showing the location of the site, a profile drawing of the bank from which the artifacts were being eroded, three photo-

graphs of the bank, one of Government Light No. 766 and one of a white elm tree, seventy-five years of age growing on the flood plain in back of the High Bank site to show how small an amount of sedimentation had taken place during the life of the tree. Seven photographs are devoted to artifacts — rim and body sherds, six large projectile points and three scrapers, a small greenstone celt of petaloid shape and the pitted hammerstone. The ceramics do exhibit a variety of decorative techniques including coarse dentate stamping on a rim with embossed nodes, wide-spaced finger nail punctate impressions and a fine brushed or dragged-comb decoration which in one instance accompanies a spurred line formed by individual semicircular punctate impressions (fingernail?). We need further research of our Woodland complexes to identify this assemblage, but Orr has preserved for us a record of a Wisconsin site we can no longer study in the field.

One suggestion regarding the use of the Microcards might be made at this point. The Microcard Reader available in the Department of Anthropology of the University of Wisconsin which this reviewer has been using is not a recent model and does not give as clear an image as might be desired for the study of such aspects as ceramic decoration. He has found it useful to examine the illustrations of specimens with a binocular microscope which obviously eliminates loss of detail produced by the ground glass screen of the reader.

Effigy Mound Culture

Of particular importance to the Wisconsin archaeologist is the new information provided on the Effigy Mound culture. Our earlier studies of this culture have given scant attention to remains beyond the state limits. Dr. Charles R. Keyes in reporting on the Iowa Archeological Survey in the **Wisconsin Archeologist** many years ago (1929, Vol. 8, No. 4) had indicated the substantial number of mounds in Iowa in making a rough estimate of the number of known mounds as about 8,000 (**ibid**, p. 139), with about 2,000 of these being in the northeastern corner of Iowa which he defined as the effigy-mound area (**ibid**, p. 140). While mounds in effigy form occur only in the three northeastern counties of Iowa adjacent to the Mississippi River (Allamakee, Clayton and

Dubuque), mounds of linear form have a much wider distribution in the state and conical mounds, as might be anticipated, the widest distribution of all. Without excavation data it would be risky to hazard a guess as to the cultural identification of the conical mounds and some have been demonstrated to be of Hopewell affiliation, but the linear mounds strongly suggest identification with the Effigy Mound culture. Their broader distribution in Iowa may well support a suggestion made by Dr. Chandler W. Rowe in his study of the Effigy Mound culture (Milwaukee Public Museum Publications in Anthropology No. 3, 1956, p. 84) that conical and linear mounds represent the earliest manifestations of the Effigy Mound culture. Since Ellison Orr reports on the excavation of a large number of these mounds, a comparative analysis of some of the internal features should also be rewarding. We may anticipate that some of this material will be included in a doctoral dissertation written by Wilfred Logan and submitted to the University of Michigan in 1958 which is scheduled for publication by the National Park Service. However, since this latter study concentrates upon northeastern Iowa, more data on other mound excavations remain to be gleaned from the Orr study.

Petroglyphs

The Wisconsin archaeologist may also make useful comparisons with the substantial number of petrogyphs reported and illustrated in various numbers of the Microcard publication. Some of these have also been illustrated recently by Dr. Marshall McKusick in an article which appeared in **The Iowan** (Vol. 11, No. 4, pp. 40-55 (July 1963). One startling interpretation in the McKusick article is that three of the petroglyphs may represent the prehistoric mammoth (**ibid,** p. 42). Two of the petroglyphs in qestion are from the Paint Rock site in Allamakee county and while these specific figures are not commented upon by Ellison Orr, it is of some interest to note that he adduced evidence to suggest that the pictographs at this site were not of great antiquity. He indicates that in 1937 after a lapse of 32 years when he had first copied some of the figures, they were noticeably dimmer and thought it doubtful that any sign of them will be left in another hundred years. McKusick has called attention to two figures at

this site that are pecked in the rock, rather than the painted forms upon which Orr commented, but since the soft sandstone does erode at a measurable rate it is to be questioned whether petroglyphs of considerable antiquity are to be anticipated in this region.

We have sampled only briefly some of the wealth of material in this recent number of the Microcard series. Information on the Oneota culture, Hopewell mounds and the characteristics and distribution of many artifact types all will be found of great utility. The publication deserves careful attention by the serious student and indicates the very great contribution made by an important pioneer figure in local archaeological studies.

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THE WISCONSIN ARCHEOLOGIST

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Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities

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LATE PERIOD COPPER ARTIFACTS IN THE UPPER GREAT LAKES REGION

George I. Quimby

Chicago Natural History Museum

For some five thousand years or more the Indians of the Upper Great Lakes region used copper for the manufacture of certain tools, weapons, and ornaments. In this brief paper I shall ignore the copper artifacts of the Old Copper and other Archaic Indians as well as those of Early Woodland and Hopewell peoples, because it is here my intent to call attention to some tools and ornaments made by Indians of the Late Woodland and Historic periods.

As noted previously by James B. Griffin (1961, p. 32), recent "archaeological records indicate that during the period from A. D. 1000 to A. D. 1700, a moderate amount of copper was shaped into small knives, awls, and beads in the upper Great Lakes area." Here I shall concentrate on the latter half of this period — say A. D. 1300 to A. D. 1700.

A number of copper ornaments have been found with burials at the Dumaw Creek site in Oceana County, Michigan (Quimby, n. d.). One of these burials has a radiocarbon date of A. D. 1680 + — 150 (See Crane and Griffin 1961, p. 110, M-1070). The calendrical date is probably closer to A. D. 1600 because there are no European trade goods at the Dumaw Creek site, and European items should have been reaching the site by about 1625 or so. On the other hand, the Dumaw Creek burials must manifest a relatively recent period because of the remarkable preservation of human skin and hair, vegetal seeds, textiles, and animal furs and skins.

Copper ornaments at the Dumaw Creek site include about 48 hair pipes, about 44 beads, and an ornamental plaque composed of tubular beads. The hair pipes are tubes of thin copper ranging in length from about 3.5 to 7.5 cm. and in diameter from .6 to .8 cm (fig. 1). Hair pipes were ornaments

worn on the head (see Quimby 1960, figs. 47 and 48), each held in place by a bundle of hair that had been pulled through the tube or pipe and knotted.

The beads were small tubes made of thin sheet copper about three fourths of a millimeter thick. Small rectanguloid sheets of copper were shaped into tubes probably by pounding them over a round stick of suitable diameter until the wall of the bead at any given point was composed of at least two layers of continuous sheet. The copper beads thus made had walls about one- and one-half millimeters thick, ranged in length from 2.3 to 4 cm., and ranged in diameter from .3 cm. to .7 cm.

The ornamental plaque from the Dumaw Creek site is composed of 26 large tubular beads paired in 13 conjoined rows that make a solidly beaded plat of rectangular outline. The individual beads are held in position by twisting strings of sinew or possibly leather. These copper beads range in length from 4.3 cm. to 4.7 cm. and range in diameter from .7 cm. to .8 cm. This particular oranament was in direct association with the skin, fur, hair, etc., upon which the previously noted radiocarbon measurement was made.

Copper artifact analysis with the X-ray spectrometer (Olsen 1962, table 1 and p. 237) was made of one hair pipe, one bead, and one piece of copper from the rectangular plaque. The results indicated that the artifacts were made of copper, probably from Michigan deposits. They most definitely were not made of the European metals found in trade kettles of the seventeenth and eighteenth centuries.

The Dumaw Creek site did not produce any awls and knives of copper, but some years ago two small knives of a style now known to be representative of very latest Woodland period were found at the Johnson site on Isle Royale, Michigan (See Quimby 1939, p. 220). One of these knives (fig. 2 a) was shaped somewhat like a butter knife. It was 6.3 cm. long with a narrow tang about 2 cm. long. The maximum width of the blade was 1.4 cm. This knife was in a shallow pit in association with sherds of Iroquoian style. The other knife (fig. 2 b) had a similarly rounded point, but the blade and back were slightly curved. It was 9.5 cm. long with a narrow tang about 2.5 cm. long, and the maximum

width of the blade was 2 cm. This knife was in a stratum five to ten inches thick that contained sherds of Iroquoian style and of Late Woodland types apparently without stratification. Although some of the Woodland sherds had lip treatments that should relate them, temporally at least, to Dumaw Creek pottery types the primary clue to the typological dating of the Johnson site and its two copper knives lies in the Iroquoian pottery.

The Iroquoian pottery includes sherds of Huron incised, Warminster Incised, and others that should be indicative of Huron or proto-Huron. It is possible that this pottery was not actually made and/or used by Huron Indians but was instead made by Huron influenced proto-Chippewa such as the Nipissing of Missisauga or some similar group. It is also

FIGURE 1. Copper hair pipes from the Dumaw Creek site.

possible that the pottery reached Isle Royale from Huron or proto-Huron sources through channels of trade. Whatever the case, the important point to be made here is that the Iroquoian pottery is indicative of a very late period around A. D. 1300 to 1650, and the copper knives associated with this pottery are of the same period.

Similar copper knives as well as copper awls and tubular beads were recently excavated by the Museum of Anthropology of the University of Michigan from the Juntunen site on Bois Blanc Island, Michigan in northern Lake Huron near the straits of Mackinac (personal communication from Alan L. McPherron). This stratified Late Woodland site has radiocarbon dates indicative of a time span from before A. D. 1000 to after A. D. 1300. Mr. McPherron is preparing a detailed report on the Juntunen site.

A copper knife, similar in form to the smaller of the two knives from Isle Royale, was excavated from the upper levels of a stratified Late Woodland site at the mouth of the Pic River on the northeast coast of Lake Superior. This site, discovered by Griffin and Quimby in the summer of 1957 was subsequently excavated by the University of Toronto and the National Museum of Canada. By the kindness of James V. Wright, I was permitted to study the Pic River site (DdIN-2) collections housed in the National Museum of Canada at Ottawa. The copper knife is about 9 cm. long, has a straight back, and a narrow tang about 4 cm. in length (fig. 2 c). The Pic River site encompasses an interval from Late Woodland to Early Historic times and the copper knife belongs somewhere in this temporal span, presumably in the latter half.

A fragmentary copper artifact (fig. 2 d) that appears to be the outer one third of a blade of the tanged "butter knife" class was found with Late Woodland pottery on the freshly eroded surface of the Seul Choix site in Schoolcraft County, Michigan. Since only Late Woodland styles of sherds have been found at this site (Quimby field notes) it is assumed that the knife fragment is also Late Woodland. The portion of the blade recovered is 4.5 cm. long and has a maximum width of 1.8 cm.

Copper awls were not found at Seul Choix. They were

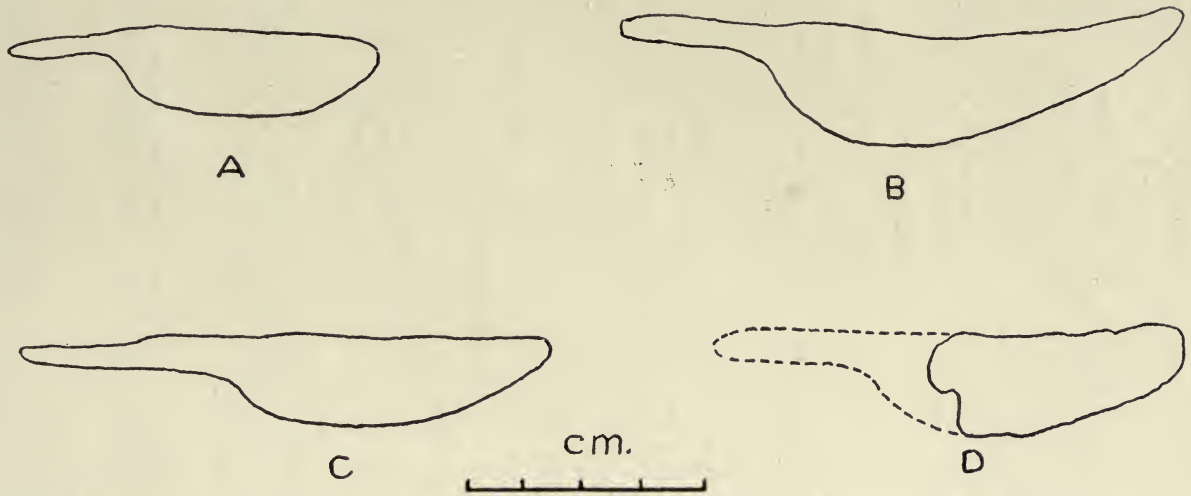

FIGURE 2. Late Period copper knives from the Upper Great Lakes Region.

present at Juntunen and Pic River, although I have not attempted to describe them here. However, two small copper awls were found by me in the upper levels of the Summer Island site in Delta County, Michigan. Both specimens are rectangular in section and slightly curved. One is 3.5 cm. long, the other is 4 cm. long. They were found in association with Late Woodland pottery and Upper Mississippi shell tempered pottery fragments, thus they seem to manifest a late period of copper manufacture in the northern Lake Michigan basin.

This brief study of late period copper artifacts is not a true survey and it is far from exhaustive. It does, however, record some specific types and proveniences in late contexts. The one radiocarbon dated site suggests that ornaments of native copper were being made as late as A. D. 1600 or even later. In the late seventeenth and early eighteenth centuries the working of native copper seems to have been supplanted by the use of European copper or brass cut from kettles and pots. Arrowheads, tubular beads and perhaps hair pipes, and tinkling cones were made of this European metal which had the advantage of already being in sheet form.

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TWO LATE PALEO-INDIAN COMPLEXES IN WISCONSIN

Ronald J. Mason

Lawrence College

In just the last few years distributional studies of typologically early forms of lanceolate projectile points (Quimby 1959, 1960) and the discovery and excavation of a cremation burial site containing certain similar materials on an early post-glacial fossil beach (Mason and Irwin 1960) have established the presence in Wisconsin and the Upper Great Lakes of a distinctive archaeological complex which heretofore had been considered confined to the Great Plains despite widely, if thinly, scattered evidence to the contrary. This hunting complex, with the finely made Eden and Scottsbluff projectile points as its index fossils, is but one of a growing number of typologically (hence, culturally) cohesive isolates now subsumed in the Plains under the term Plano and, in the Upper Great Lakes, Aqua-Plano (Quimby 1960: 34-42). Various sub-divisions, usually based on projectile point typology in the West, and given such names as Eden, Scottsbluff, Plainview, Angostura, etc., have been placed together with certain eastern assemblages on technological, stylistic, and subsistence criteria in a proposed Late Paleo-Indian cultural stage with sometimes demonstrated, sometimes assumptive, statements of general contemporaneity (Mason 1962).

It is my purpose in this paper to place on record some more examples of two major groups of Late Paleo-Indian projectile points found in Wisconsin which clearly relate to materials presently best known from the Great Plains of the United States and southern Canada. Having seen and handled good samples of the western material I do not hesitate to extend certain specific type names to the Wisconsin area where I can discern no typological reasons for not doing so. For a long time I have been hard put to justify the marked hesitancy of many of my colleagues in attacking the terminological curtain which has been stretched the length of the Mississippi Valley and which allows as proper the employment of such highly specific type designations as Eden and Plainview from the Canadian prairie provinces in the north to Texas in the south, yet falters at the lesser distances eastward despite the absence of any known natural or cultural (of the aborigines,

that is) barrier. As long as rigorous control is maintained over the typological perimeters which define a type I see nothing but obscurantism in arbitrarily restricting a useful terminology to the region of initial formulation. I would counter the possible objection that such names as Eden and Scottsbluff should be restricted in the applications to Plains representatives of a certain formal class because they are more than formal types but reflect or have as their cultural matrix a plains oriented or plains adapted life-way by suggesting that this conception is perhaps a function of historical accident as to where the initial finds were made. It is certainly not a product of any kind of distributional analysis. Additionally, of course, the application of typological nomenclature should be guided by typological criteria. Possible correlations with culture type, ecological orientation, etc. are separate problems to be solved by the manipulation of all available data. To this end projectile points or any other artifact types with known associations and chronology in one region may, indeed frequently are, used to tentatively fill in correlative gaps in another region until independent information is forthcoming. But this can only be done when typology is not confused with something else.

By Late Paleo-Indian I refer to the cultural stage and stone technology generally following the use of fluted points and generally preceding the emergence of Archaic cultures with their distinctly different chipped stone industries, ground and polished stone tools, employment of copper, and evidence of the development of regional traditions in part consequent to the "settling in" and subsistence utilization of varying ecological situations. This stage and period — they are not the same thing though they have frequently been confused — have been called Late Paleo-Indian or Early Archaic depending on the not always explicit frame of reference, and Quimby has characterized them as dominated by the "Aqua-Plano" tradition (1960: 34-42). For reasons propounded elsewhere I use the term Late Paleo-Indian to refer to the general cultural stage (and also the period it occupied) manifested, in the Upper Great Lakes, by a variety of lanceolate points and associated chipped stone tools made by apparently highly nomadic hunters and sometimes found in primary association

with fossil beaches formed during the early post-glacial period (Mason and Irwin 1960:55; Mason 1962: 233). My use of this term is essentially congruous with Quimby's use of Aqua-Plano but has the slight terminological advantage, I think, of laying proper stress on the demonstrable continuities with Paleo-Indian as characterized by several varieties of fluted points by subsuming both, where they clearly belong, in the same broad cultural stage. Other terms might better be reserved for temporal, geographic, technological, or what have you, divisions encompassed by the broader rubric.

Recent investigations, some of which summarize earlier finds pointing in the same direction, have convincingly demonstrated that Late Paleo-Indian assemblages are very wide spread in the Upper Great Lakes (Fitting 1963a, 1963b; Mason 1962; Quimby 1959, 1960). They are by no means confined to this region, of course, but have close relatives westward to the Rocky Mountains and eastward at least to the Appalachians. In Ohio, Prufer has documented materials some of which are strikingly similar to the Wisconsin and western complexes (Prufer 1960a: 8-10, 1960b: 12, 1961: 9). Other comparable finds have been briefly reviewed for other sections of eastern North America in conjunction with a survey of fluted point distributions (Mason 1962).

There are several different projectile point styles classifiable as Late Paleo-Indian in the Upper Great Lakes. Some of these appear to have dissimilar geographic distributions and may additionally record temporal divisions within the Late Paleo-Indian Period. One cohesive variety of Late Paleo-Indian artifacts with a wide Upper Great Lakes distribution is represented by the Hi-Lo component recently defined in the lower peninsula of Michigan (Fitting 1963a, 1963b). The present report deals briefly with two other divisions of Late Paleo-Indian projectile points notable for their sometimes startling resemblance to certain types of Early Man points initially defined in the Plains where they have been dated by a variety of physical means and have been associated with the remains of fossil bison.

On the accompanying plates are twelve Wisconsin projectile points. The first eight of these undoubtedly belong together as representative of a distinctive cultural tradition

within the Late Paleo-Indian stage whose closest affinities are with the Eden-Scottsbluff (Cody) complex until recently thought to be confined to the western plains of the United States and Canada. Three of the Wisconsin specimens are Scottsbluff Type I points (nos. 1, 3, and 4), two are presently best classifiable as Scottsbluff-related (nos. 2 and 6), two are Eden points (nos. 5 and 8), and one is probably a related type of the classic Eden point (no. 7). The specimens identified as Scottsbluff and Eden are identical, usually but for petrology, with their better known western counterparts. This is likewise true of the artifacts from the Renier site in Brown County — the only known Eden-Scottsbluff site in the state (Mason and Irwin 1960). The assertion of typological iden-

FIG. 1. (1) Scottsbluff Type I. (2) Scottsbluff-related. (3) Scottsbluff Type I.

tity rests not alone on overall shape, of course, but also on proportions of stem to blade length and breadth, edge finishing, and in all details of the highly sophisticated flaking techniques for which Eden, Scottsbluff, and other Plano points are noted in type descriptions. Somewhat cruder examples of these types exist in the West as well as in Wisconsin although these are rarely figured in the literature. The presence of both Eden and Scottsbluff points in different parts of the state, coupled with those excavated at the Renier site, adds another distinctive culture to the expanding picture of early Wisconsin prehistory. That some perhaps "local" modifications developed on this assemblage is suggested by the variant forms with laterally expanded basal ears, an attribute seemingly unknown on the plains.

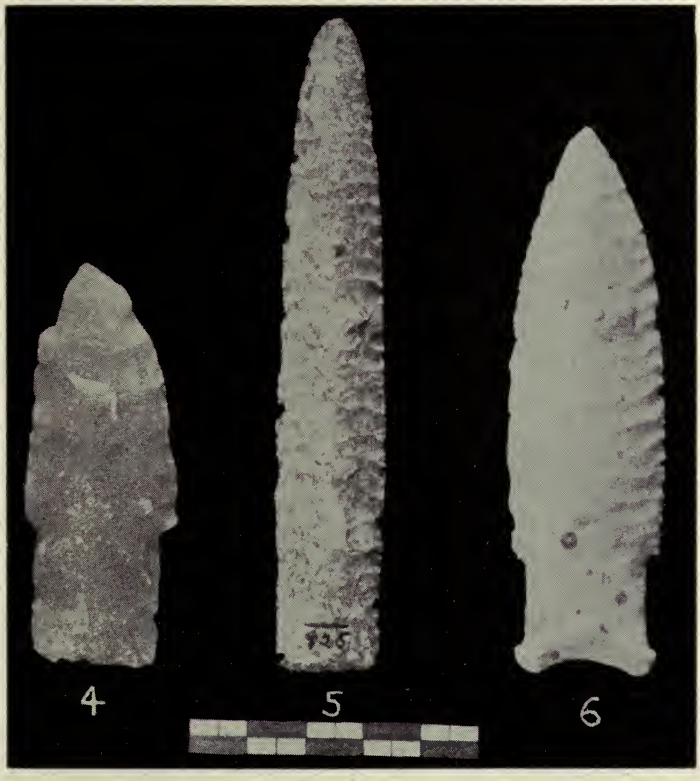

FIG. 2. (4) Scottsbluff Type I. (5) Eden Type. (6) Scottsbluff-related.

At the present time Eden and Scottsbluff points are not known from across the lake in Michigan, although some resemblances may be noted in certain argillite points from that area. It is notable that the Eden-Scottsbluff complex in Wisconsin, as well as the other Late Paleo-Indian assemblages, though to a lesser degree, exhibit a marked emphasis on the use of fine grained quartzites as raw material in the fabrication of projectile points and tools. In large areas of the state otherwise dominated by chert using cultures, this sign of cultural selection harks back to the period of fluted points. It is one of the tasks of present research to trace the source of this raw material.

The sample illustrated in the plates is, with one exception, selected from the collections of the Neville Public Museum in Green Bay and the Oshkosh Public Museum.[1] I have also seen similar artifacts in the Public Museum of Manitowoc, the Milwaukee Public Museum, the Museum of the State Historical Society in Madison, and in a few private collections. I hope collectors in the state will examine their collections for additional examples.

The remaining projectile points illustrated in the plate (nos. 9-12) are Plainview and Plainview-like points which, like the Eden and Scottsbluff specimens, relate to an early post-fluted point horizon currently best sampled in the western Plains states. These four artifacts, only a repesentative sample of a much larger collection, probably belong to a division of the Late Paleo-Indian stage to be distinguished from both that recorded by the Eden and Scottsbluff and related stemmed forms and that represented by the Hi-Lo Complex. These three divisions, and probably some others as yet unrecognized, indicate that the Late Paleo-Indian stage in the Upper Great Lakes is not a simple or homogeneous transitional one intervening between fluted points and the Archaic. The different constellations of morphological attributes and their differential distributions both east and west

[1] I want to thank James L. Quinn, director of the Neville Public Museum, and Robert Hruska of the Oshkosh Public Museum for access to the collections of their respective institutions. I am also indebted to Harris Palmer, Wisconsin State College and Institute of Technology, Platteville, for the loan of point number 6.

suggest that a complicated story remains to be unearthed. Late Paleo-Indian assemblages overlap in time with the end of the Early Paleo-Indian (fluted point) stage in parts of this region and with the earlier manifestations of the Archaic stage. It is at these shadowy boundaries that some of the most exciting research beckons.

Description of the Sample

The following individual descriptions and remarks are

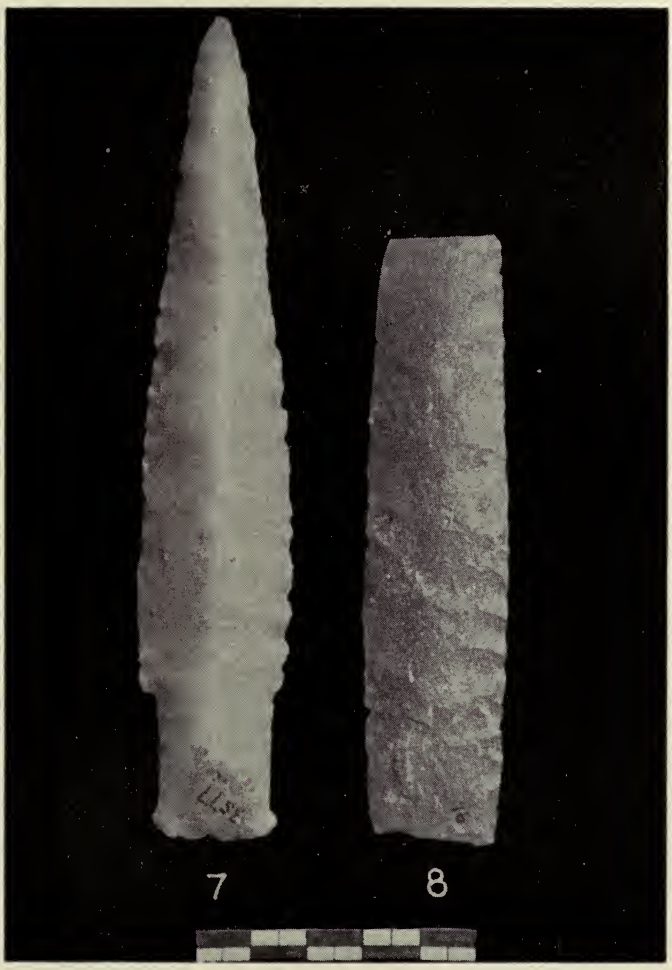

FIG. 3. (7) Eden Type. (8) Eden Type.

keyed into the numbered specimens in the plates. For simplicity, all pertinent metrical data have been abstracted and placed in tabular form (Table 1).

No. 1. Oshkosh Public Museum, catalogue number 144/L268. From Butte des Morts (probably from section 24 of Winneconne township), Winnebago County. Collected by C. J. Koehn. Material: quartzite. This is a classic example of a Scottsbluff Type I point incorporating some fine horizontal transverse flaking. There are distinct but not emphatic median ridges on both faces. Pronounced grinding has dulled the lateral and basal edges of the only slightly instepped stem. Also in the Oshkosh Public Museum (cat. no. 135/L268) is a fine Clovis fluted point collected from the same area and made of the same material.

No. 2. Neville Public Museum, Green Bay, catalogue number 796/212. From the northeast quarter of section 29, township of Pierce, Kewaunee County. Apparently collected by F. Rothe and subsequently incorporated in the J. P. Schumacher collection presented to the museum. Material: quartzite. This is a Scottsbluff or related point with flat, tending to transverse, flaking. The laterally flaring basal "ears" seen on this and some other similar Wisconsin points may have chronological as well as geographic significance (Mason 1962:239). The lateral and basal stem edges have been ground smooth. The splendid quartzite Scottsbluff point illustrated by Quimby (1960:35, fig. 13), and labeled an Aqua-Plano point, is from the same section of Kewaunee County as this specimen.

No. 3. Neville Public Museum, 3569/455. Probably from Brown or a nearby county. Collected by J. P. Schumacher. Material: quartzite. An excellent example of a Scottsbluff Type I projectile point with the gentle expanding stem and the careful flat collateral to transverse flaking typical of the Scottsbluff points excavated at the Renier site in Brown County (Mason and Irwin 1960). A small section of the distal end is missing and there is a broad impact scar emanating from the break. All stem edges have been reduced by grinding.

No. 4. Neville Public Museum, 3923. Provenience uncertain but probably from eastern Wisconsin. Collected by A.

FIG. 4. Plainview.

G. Holmes and subsequently incorporated in the Frank J. B. Duchateau collection presented to the museum. Material: quartzite. An excellent, if somewhat more boldly flaked than usual, Scottsbluff Type I point. There is some breakage and flake-back at the tip from impact damage; this has been minimally retouched by pressure flaking from alternate faces. The flaking tends to be collateral but does not meet across the blade. Stem edge grinding is light except just beneath the shoulders.

No. 5. Oshkosh Public Museum, 925. From Green Lake County. Material: patinated dark honey colored chalcedony. The specimen is a classic Eden point with deep and even collateral flaking and median ridges on both faces which give the point a diamond shaped cross section. The stem (it is barely one) is only very faintly instepped and is smoothed, not by grinding, but by minute painstaking pressure flaking. The straight basal edge is slightly beveled by steep pressure flaking from one face. While both faces of the artifact are well streaked and mottled with creamy to bluish patina, one is particularly so altered. What is of unusual interest is the distinctive material of which the artifact is made. This almost certainly non-Wisconsin material (an opinion shared by Drs. William F. Read and Leonard W. Weis of the geology department at Lawrence College) is very reminiscent of some of the chalcedonies I have seen in collections of Early Man points from Wyoming and adjacent regions. Another example of the same material is represented by a small and somewhat irregularly flaked Agate Basin type point in the Neville Public Museum (cat. no. 1026/222). Collected by J. P. Schumacher near Big Suamico in Brown County, this specimen also shares with the Eden point the same kind of patina, though it is much less extensively developed. The petrology strongly suggests western origin and subsequent eastward movement such as some archaeologists have frequently invoked but not yet demonstrated on this time level. Other Wisconsin Eden points are usually made of non-exotic quartzites.

No. 6. Collection of Harris Palmer, Wisconsin State College and Institute of Technology, Platteville. Found near Millston, Jackson County. Material: fossiliferous creamy

white chert or flint. A Scottsbluff or Scottsbluff-related point with bifacial median ridges and a flattened diamond shaped cross section. Blade flaking is fine and tends to be obliquely transverse on one face, collateral on the other. The moderately instepped stem meets the blade at a sharp shoulder and is provided with laterally flaring basal ears of the type mentioned before. The base is concave. This latter feature, while not usual, is nevertheless found on some otherwise typical Scottsbluff points from the northern plains states where it is sometimes even associated with pronounced fluting of the stem. Only the ears at the juncture of basal and lateral stem edges, then, qualitatively distinquish this specimen from the Scottsbluff Type I point. All stems are ground.

No. 7. Neville Public Museum, 3577. Provenience unknown, but certainly Wisconsin. Collected by either a Mr. Heckert or C. D. Brower and acquired by Frank J. B. Duchateau and presented to the museum. Material: quartzite. An Eden or Eden-related projectile point made of the same quartzite as point no. 2 from Kewaunee County. The unusually attenuated blade is provided with a pronounced median ridge on both faces accentuated by deep and regular collateral flaking. The cross section is diamond shaped. The lateral projections or basal "ears" are shared with points 2 and 5 and are attributes not reported for western Eden points. They are likewise not found at the Renier site. All stems are well ground.

No. 8. Oshkosh Public Museum, 16/800. From Marquette County. Collected by Arthur Kannenburg. Material: quartzite. An Eden point without an instepped stem. The "stem" area, however, is heavily ground except on the basal edge. The flaking pattern is not as even as in the case of the other Eden and Eden-like points but there is some tendency to the collateral style. The tip is missing and the table of metrical attributes records the estimated original length.

No. 9. Oshkosh Public Museum, 241/1. Provenience uncertain but believed to be from Wisconsin. Collected by J. G. Pickett. Material: mottled gray chert. A Plainview type projectile point with a thin cross section, well defined concave base, and basal thinning. The flaking is flat and irregular below the midpoint, tending to be parallel tranverse above. Edge

grinding is extensive.

No. 10. Neville Public Museum, 1021/222. From the town of DePere, Brown County. Collected by J. P. Schumacher. Material: creamy tan chert. A broad bladed Plainview or Plainview-like point with flat irregular flaking and lacking edge grinding.

No. 11. Neville Public Museum, 1010/222. From the Huemfner Farm, town of Preble, Brown County. Collected by J. P. Schumacher. Material: patinated mottled tan chert. This is a fine example of a Plainview point. Blade flaking is broad, regular, and parallel transverse, and one face exhibits basel thinning. Lower lateral edges have been trimmed by fine pressure retouch rather than ground.

No. 12. Neville Public Museum, 787/212. From Big Suamico, Brown County. Collected by J. P. Schumacher. Material: quartzite. A Plainview point. This specimen has a very shallow concave base. The flaking is broad and irregular on one face, tending to oblique transverse on the other. Extensive grinding is evidenced on the lower lateral edges and on the basal edge except in the center. There is moderate basal thinning.

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No.	Total Length	Blade Breadth	Maximum Thickness	Stem Length	Stem Breadth	Basal Breadth	Weight Grams
1.	70.0	28.5	9.0	21.0	26.0	25.0	17
2.	120.0	40.0	10.0	20.0	25.0	26.5	55
3.	107.0*	31.5	9.5	19.0	21.0	24.0	32*
4.	74.0	27.0	10.0	22.5	22.5	22.0	20*
5.	114.0	19.0	7.5	18.0	18.0	18.0	16
6.	95.0	28.0	9.0	20.0	21.0	25.0	23
7.	147.0	28.0	12.0	25.0	20.5	22.0	46
8.	140.0*	26.0	9.0	---	---	23.0	?
9.	74.0	24.0	5.0	---	---	20.0	12
10.	69.0	27.0	6.5	---	---	21.0	14
11.	79.0	26.5	6.5	---	---	21.0	12
12.	73.0	25.5	7.5	---	---	21.0	14

Table 1. Measurements of the Late Paleo-Indian projectile points described in the text. Measurements are in millimeters and an asterisk (*) indicates an estimation of the original dimension.

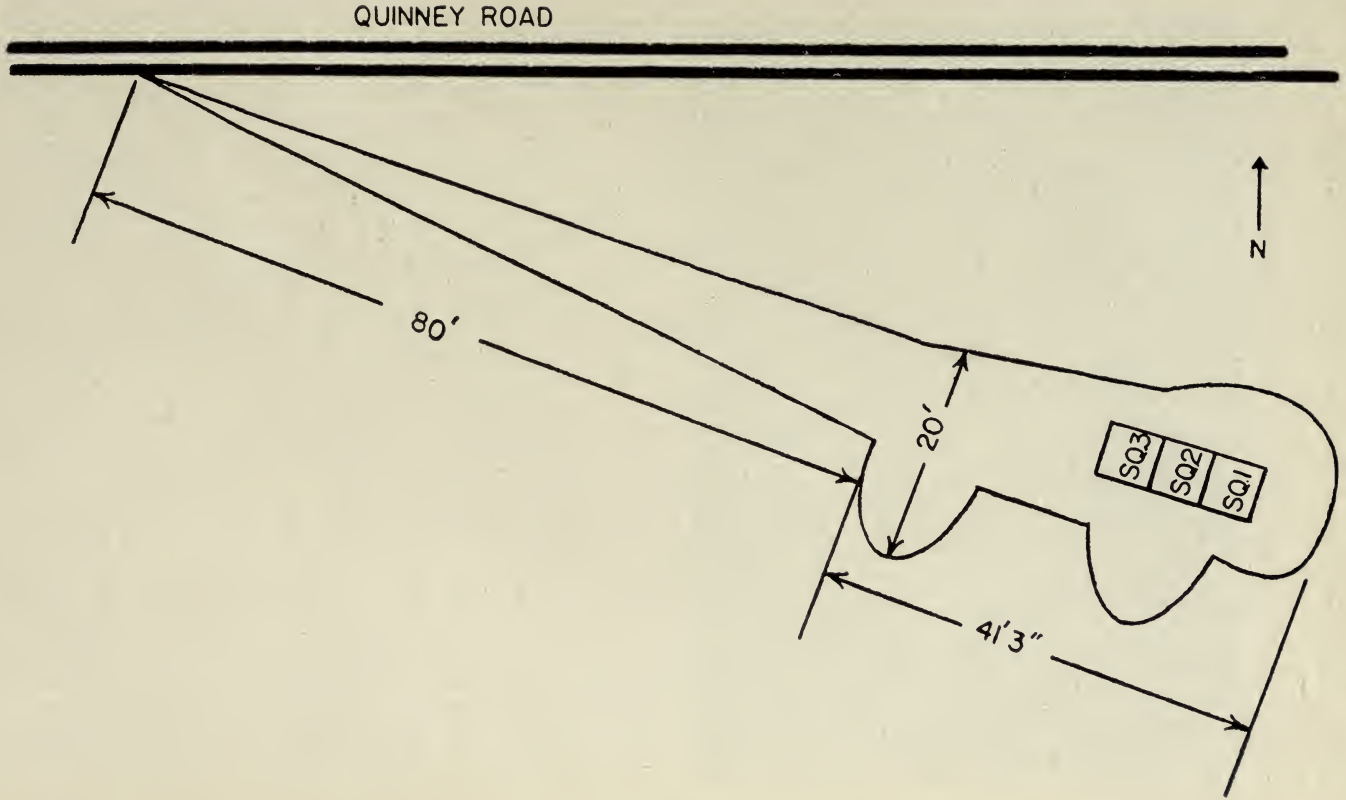
A PANTHER MOUND AT QUINNEY, CALUMET COUNTY

Paul A. Turney

This mound was located in the late fall of 1962 by four members of the Wisconsin Archeological Society: Tom Jackland, Paul Koeppler, Neil Ostberg and the author. The members were surface hunting for relics along the east shore of Lake Winnebago when the mound was discovered beside the road. The owner of the land became very interested when told it was an Indian mound. The records of the Milwaukee Public Museum were checked and it was found that the mound had never been recorded. This meant that it would have to be measured and located accurately. In the spring of this year, May 25, 1963, the mound was measured and excavated.

It is not easy to locate this mound with map co-ordinates, as it was located in the old Stockbridge Reservation which was not laid out in sections when the land was surveyed. It is located on lot 57 Stockbridge Township, Calumet County. It is .2 of a mile east of highway 55 on Quinney Road, on the property of Mr. Fred Hervey. It was constructed on the side of the hill that slopes Southwest toward Lake Winnebago and was oriented Northwest-Southwest, with the head to the Southwest. The mound is a panther mound and is 121' 3" long; the tail measures 80', the front leg, measured from the back of the effigy, is 30', that being the widest part of the mound. At the highest part of the mound the measurement is 2' 9" from ground level. All of these measurements were made from a line running north south off of the northwest corner stake of Mr. Hervy's lot line. The tail intersects the drainage ditch along Quinney road and may have been longer as the road builders could have destroyed part of it.

For the excavation, by the aforementioned members, a 5' wide trench was laid out starting in the head and shoulder area of the mound and measured in 5' sections toward the tail. Each section was taken down in six inch levels until the original ground level was reached. The original ground was excavated to a depth of 6 inches and was composed of a reddish clay mixed with gravel. The mound itself was composed of a clay loam dark brown in color and rather tightly


QUINNEY ROAD
N
80'
20'
SQ3
SQ2
SQ1
41'3"

packed. Intermixed throughout were intrusions of the subsoil. These showed up as pockets in the mound fill that appeared to be basket loads but they were too indistinct to measure or photograph. The first two squares yielded no article of Indian manufacture. There was charcoal intermixed with the fill and an occasional stone that showed no evidence of use. The third square yielded two small sections of human long bone, possibly a leg bone. One was 2½" in length, the other was 3" in length. These fragments of bone were in an area very badly disturbed by an animal burrow, possibly a woodchuck by the size of the den. The bone fragments lay just at the edge of the burrow and about a foot apart; they were 20" below the mound surface. Further excavation failed to yield any further evidence of a burial. The bone was in a very poor state of preservation and could hardly be extracted from the surrounding soil.

The information gathered from the excavation showed that a burial had been present but had been disturbed and destroyed by some animal. There was no sod line under the mound so it must have been removed before the mound was constructed. There was one odd feature present. About 1' 6" below the mound surface was a thin humus line that followed the present contour of the effigy. It looked as if the mound was constructed and a while later enlarged; this was the opinion of all Archeological Society members present.

We would like to thank Mr. Fred Hervey for allowing us to dig on his property and also for his very able assistance in surveying the mound. Mrs. Hervey deserves our thanks for two tasty meals and the hospitality of her home. Thanks to Dr. Robert Ritzenthaler for making the arrangements for the dig.

A COPPER INGOT?

Robert Ritzenthaler

A rather interesting piece of copper was found by Robert Lorenz of Milwaukee at the south end of Elmwood Island in Fox Lake, Dodge County. It is 2½ inches wide, 1¼ inches high, and ⅜ of an inch at its greatest thickness. It was about — feet below the surface and associated with a human bone fragment and a Woodland point.

The unusual aspect of the piece is that all three edges of its roughly triangular shape show evidence of hammering, and one surface has a folded layer. It is certainly not an artifact in its present form, and does not even suggest an incipient or unfinished artifact. Mr. Lorenz's suggestion that it might be an ingot is well taken. An ingot is defined in Webster as a "mass of metal cast into some convenient shape for transportation or storage." This piece was not cast, but the possibility of its having been beaten into a more compact shape and eliminating any sharp edges for convenient transportation seems worthy of consideration. The paucity of worked implements near the great quarries such as Isle Royale suggests that the Indians mined the native copper and took it to their respective villages to work it.

A weakness of the ingot theory is that if this were a con-

sistent practice, one would expect to find more examples of it. This is the only example that the writer has encountered. Obviously most of them would end up as artifacts and thus disappear from the record, but even so it would be suspected that other examples would have been forthcoming by now as having been lost in transit or in a workman's stockpile, if this theory is to be given credence.

These pieces should not be confused with float copper which occasionally shows evidence of battering, but we would be interested in hearing from any collector who might have a specimen similar to this which could lend further support to the ingot theory.

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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

This issue turns to ethnology, long an area of concern to The Wisconsin Archeological Society which has recognized that the study of Indians of the present day and the historic period forms a natural continuum with prehistory. Our guest reviewer, Dr. Bernard J. James, has recently shifted from the University of Chicago to his present position in the Department of Anthropology of the University of Wisconsin - Milwaukee and the Extension Division of the University. He too has conducted extensive studies among the Chippewa Indians of Wisconsin.

The Southwestern Chippewa: An Ethnohistorical Study by Harold Hickerson. American Anthropoligical Association, Memoir 92, 1962. vi + 110 pp., 3 maps.

Hickerson's monograph comes at a most propitious moment in the growing body of literature concerning Chippewa culture and personality change. As a refinement of historical and ecological problems, it also has significant implications for acculturation theory emerging from Chippewa studies.

There are several reasons for the increasing attention paid the Chippewa. For one thing, we have sufficient historical data to study the culture in depth, and this history provides virtual "laboratory" conditions for study of acculturation phenomena. Also, Hallowell's investigations of pyschological patterns in collective Saulteaux behavior have continued to stir interest in personality traits of the entire Chippewa population. As a consequence of these developments, we now have a sizeable professional literature in Chippewa studies, including multiple recent papers from each of the researchers active in the area, including Barnouw, Boggs, Dunning, Friedl, Hallowell, Hickerson, James, and Kerckhoff. Hickerson's monograph is a welcome addition to his growing list of Chippewa papers.

A salient argument of the Hickerson study, one which is certain to generate active debate, is the assertion that "there can be no portrait of the historical Chippewa as a single people." (p. 88) This would seem, at first glance, to be a rather extreme claim. Evidence now in hand, however, would appear to support such a view. The "Chippewa culture" (parts of which may be designated Ojibwa or Sauleaux) has certainly been a complex, often obscure, association of peoples, and although they have common basic traits, member groups have been exposed to different historical and cultural forces. The southern peoples, those occupying the region below the Rainy River and Lake Superior, were subject to much more intensive conflict with hostile tribes, as well as to much more intense contact with whites, than were people to the north. Hickerson is, therefore, undoubtedly correct in stressing the pluralistic nature of the Chippewa "nation."

The monograph distinguishes seven Chippewa culture-change eras; spanning the period from about 1640 to the present day. They are delineated as follows: the precontact period during which small, autonomous, patrilineal totemic groups moved about north and east of Lake Erie; the early contact period during which some of these groups affiliated at the fisheries of Sault St. Marie (from about 1640 to 1680); the period of peaceful establishment of relatively large settlements at Chequamegon and Kewenaw, with trade and hunting alliance with the Dakota (from 1680 to 1736); the years during which the Dakota alliance broke down and Chippewa groups moved inland in the face of Dakota resistance (from 1736 to about 1780); an era of continued movement by the Chippewa into regions of the Red River and the Minnesota River, until about 1850; the period of the decline of the fur-trade and session of large tracts of land to the United States; and the final era from mid-nineteenth century to the present, during which the reservations were established and most remaining native cultural forms disintegrated.

The second, third, fourth and fifth eras receive the lion's share of Hickerson's attention. Close study is given in particular to the diaspora-like movement from Chequamegon and Kewenaw. The crucial area involved is a crescent-shaped zone running from Chippewa Falls, Wisconsin to the Pem-

bina region on the Red River. This zone is a fascinating arena of acculturation forces, and one of the significant contributions of the monograph, in my view, is the author's demonstration of the close relationship between ecological and cultural factors in the area. Conflict between the Chippewa and Dakota was particularly intense in a belt of deciduous forest and parkland paralleling the Minnesota River. A heavily gamed region, it appears to have been a no-man's land between the river tribes. It is significant that the line of the Prairie du Chien Treaty of 1825, a treaty by which each tribe occupied part of the prized area, coincide with this forest-prairie zone — a striking evidence of the close relationship between natural, economic, political and social factors.

Although Hickerson does not go into the east-west cultural distinction as deeply as he might have, one can identify a synchronic dimension of change that was evidently related to his seven-era historical span. It appears that vanguard groups moving southwesterly in the teeth of fierce Dakota forces underwent more rapid internal social change than did peoples located in more peaceful rear areas. One has the impression that structural change in Chippewa institutions was most dramatic on the periphery of the southwest area, the troubled regions of Minnesota and Wisconsin. One can discern, then, two axes of cultural change, one along the historical time dimension for each area, the other by geographic areas with differential rates of social-structural adaption. With the Hickerson study in hand, generalizations concerning the dynamics of Chippewa structural change in front, as contrasted with rear, contact zones could now be profitably explored.

The monograph rests essentially upon a theory of economic determinism. It contrasts, for this reason in particular, with the ethno-psychological emphasis of Barnouw's 1950 monograph. It undertakes, for example, to demonstrate that changes in land tenure were related to tribal conflict over fur and hunting grounds. In the southwest, this involved a shift from hunting territories held by small, widely dispersed family groups, toward patterns in which hunting territories were determined by the collective needs of villages. It also suggests that the dissolution of cross-cousin marriage in the

south was a structural consequence of the growth of village solidarity. In Hickerson's words,

> In the southwest. the advance to the game grounds was a community affair, and the size of the hunting band was determined by the number of men who could bear arms and remain in ready communication. The band in the southwestern hunting areas was on broad ground the economic equivalent of the northern coresidential unit; however, its organization was not based upon the co-residence of agnates, but rather on the mutual interest and solidarity of related and unrelated village mates. (p. 45)

These are the essential reasons why Hickerson takes issue with "atomistic" interpretations of southwestern Chippewa behavior.

I personally find the economic emphasis in Hickerson's conceptual framework congenial. It seems to me that questions of how people keep body and soul together are priority concerns regardless of whether one examines culture at its economic foundations or at the more complex and subtle psychological level of analysis. It is possible, of course, to argue from a strictly functional point of view that selection of variables is a matter of choice and convenience, that all behavioral phenomena, whether economic of psychological, are equally "real" and casually significant. From a configurational standpoint, for example, one can maintain, and with good reason, that it is useless to try to understand a phenomenon such as the **potlatch** merely as an economic form; its social-psychological characteristics are clearly very potent. Nonetheless, it may be argued, as Hendrickson might, that one can minimize errors in theory building by an approach which generalizes from "simple" phenomena at the visceral level, say economic subsistence needs, to complex phenomena concerning ethos and collective psychological disposition, rather than the other way around.

One of the arguments advanced by Hickerson which will undoubtedly stir a good deal of debate for some time to come is that warrior societies had begun to merge among the Minnesota and Wisconsin Objibwa during the 19th century. The evidence which he cites is not entirely convincing, though it is intriguing. The **Gigidag** class, for which Hickerson finds

some evidence at Leech Lake, Lac du Flambeau and Lac Vieux Desert, was probably an emergent social form that was not clearly understood even by participants in it. From a logical point of view, the conditions which Hickerson says marked the period (about 1830) when the societies began to develop, could be expected to precipitate such new social forms. These conditions include, for example,

> . . . incessant territorial warfare involving large village populations; the organization of hunters into bands always available to defend their hunting groups . . . ; the existence of hereditary and other chiefs . . . (59)

By the very nature of the case, however, emergent forms such as these societies may have been, would be indistinct during their early years of development. Evidence for them is bound to be illusive. In the case of the Chippewa warrior class, the question of their existence as a significant social structure may be inherently insoluable.

The Hickerson study does not examine in any detail the period of land cession and reservation establishment running from about 1840 to the present. However, the author does summarize his views concerning these latter developments by observing:

> The virtual collapse of the fur trade as a profitable enterprise, in combination with a generally diminishing game supply, were crucial in preparing the way for acceptance by the Chippewa of the cession and reservation eras. (p. 89)

Most scholars working in this area would probably agree. What is needed now, however, are studies of the sixty-year period from about 1870 to 1930, during which the fur-trade and hunting-gathering economy was replaced by the pauper-dependent economies of the reservations. This period is particularly significant because it was during these years that the Indian "problem" assumed its present dimensions and contemporary personality characteristics began to emerge. As far as research is concerned, it is, unfortunately, a missing link in Chippewa culture-history. With the exception of a few papers, such as Gilfillan's report on conditions in Minnesota in 1901, we have very limited information on life during the early reservation era. We need now to connect the dra-

matic years which Hickerson has analyzed with contemporary events such as Boggs, Kerckhoff and I have examined. It would be most fortunate if Hickerson were to turn his skills as an historian to a study of the years between 1880 and 1930.

Bernard J. James,

University of Wisconsin – Milwaukee

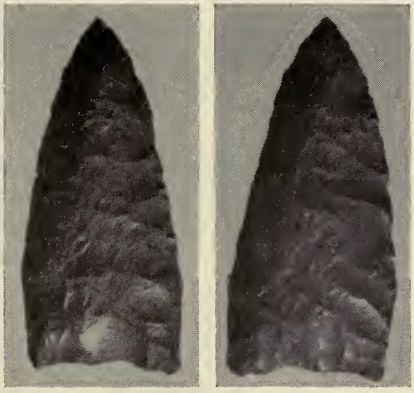
Interesting Wisconsin Specimens

FLUTED POINT

Of Chert. Length 1⅞". Fluted on both sides. Found by Paul Koeppler in Mud Lake area. Section 23, Portland Tnshp. Dodge County.

FLUTED POINT

Clovis type with flutes on both sides. Found by Robert Couvillion in northeast part of Peshtigo, Marinette County.



A FLUTED POINT FROM JUNEAU COUNTY

This specimen is noteworthy for the fine long diagonal flaking especially on one side. There are short flutes on both sides. Length is 2⅜ inches, width at base is 1 inch. Surface find in S. W. ¼ of N. W. ¼ of Section 12, Town of Orange, Range 2 E., Juneau County, Wisconsin. Harry Mortensen collection, New Lisbon.

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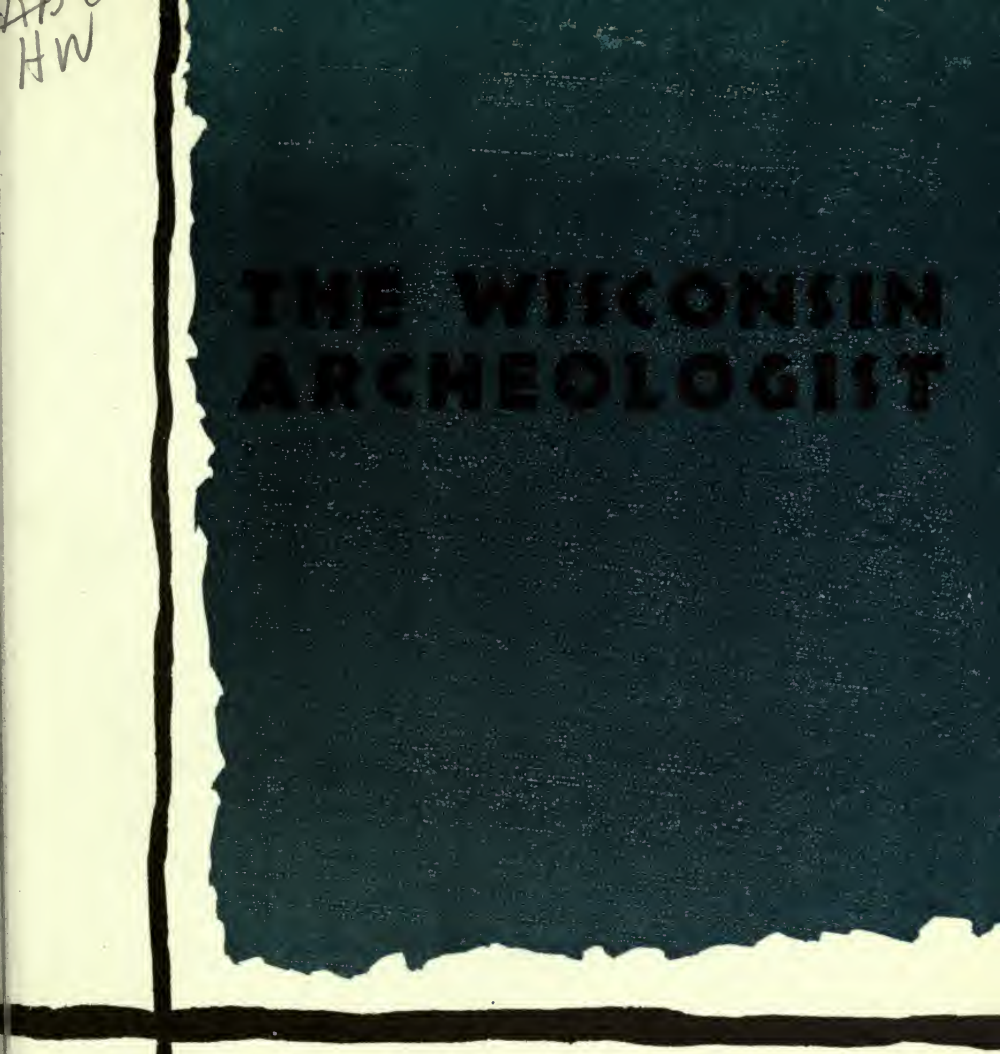

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Milwaukee, Wisconsin

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For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities

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THE OKLAHOMA KICKAPOO: AN ETHNOGRAPHIC RECONSTRUCTION

Ben J. Wallace

ACKNOWLEDGEMENTS

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The author is especially indebted to Professor A. M. Gibson for making available a manuscript on the history of the Kickapoo and the notes used in preparation of the manuscript. Without his assistance, the author would have had great difficulty presenting adequate historical data on the Kickapoo.

For financial assistance, the author would like to express his appreciation to the Lew Wentz Foundation, University of Oklahoma, and to the Southwest Center for the Study of Human Relations, University of Oklahoma.

Finally, special acknowledgement should be given to the Kickapoo men and women whom the author grew to know personally, and to the Oklahoma Kickapoo tribe as a whole, for without their approval and assistance this report could have never been written.

PHONETIC KEY *

Vowels:		Consonants:		Signs:	
i	feet	ø	thus	'	stop
e	bet	š	ship	´	accent
a	father	ž	garage	a^{j}	diphong tie
u	sue	č	church	&^{j}	diphong hay
o	rope		Other		
ʌ	such		consonants		
^{a}	whispered a		as in		
			English		

* The phonetic transcriptions in this report are impressionistic and are not to be considered absolute renditions of Algonquian as spoken by the Kickapoo..

INTRODUCTION

Historical Perspective

The documented history [1] of the Kickapoo begins during the early part of the seventeenth century when the French started their western movement from Montreal and Quebec. Moving west and south from their St. Lawrence settlements, they established military posts, commercial trading posts, and Jesuit missions in a land that had up until this time been under the control of the Algonquian tribes. During this period of exploration, soldiers, traders and priests made periodic reports to their superiors. In one such report in 1634, the Kickapoo and their confederates, the Mascoutin and Fox, are mentioned for the first time (Gibson MS).

Following contact with the French and after becoming "intrigued by the knives, hatchets, and guns; the blankets, fabrics, and baubles; and armed by Onontios milk (the fiery brandy, dispensed by the French in council in little cups), the Algonkian brotherhood for the most part succumbed docilely to the seductive design of the French" (Gibson MS). The Kickapoo and their allies, however, "become outlaws in the western French Empire, a rugged banditti folk who plundered French supply trains, shot down messengers and isolated **coureurs de bois,** massacred Indians friendly to the French.

During the French and Indian War the British incited the Chicksaw to make war on the Kickapoo and in retaliation

the Kickapoo started a reign of terror against the British. "englishmen were slain and scalped, their women and children carried away into captivity, and their slaves mutilated" (Gibson MS). Kickapoo resistance to the British continued throughout the American War of Independence although their part in this war was very small and at the close of the war and as the American settler began moving west, "Kickapoo policy toward the 'Long Knives' changed at a rhythm as steady as the advance of settlement" (Gibson MS). In hopes of turning back the settlers, the Kickapoo began sending delegates to Detroit seeking British council, while at the same time, they were visiting the Spanish at St. Louis. It has been noted that "the Kickapoo became reliable and trusted defenders of British interest, less for the sake of the British per se, but more so because the objective of both the British and the Kickapoo . . . was the same — namely, stemming the tide of American settlement" (Gibson MS).

Numerous unsuccessful attempts were made by the United States government to negotiate treaties of peace with the Algonquian tribes prior to 1790 and because of this lack of success, a series of expeditions against this confederacy was initiated by order of the Secretary of War. In late 1790, an undefeated Kickapoo village on the Wabash was burned. In the early summer of 1791, the Kickapoo village of Kathtippecanoe was attacked and every lodge was burned. Later this same year, General James Wilkerson led an attack against a third Kickapoo village. He reported as follows: " 'I have burned a respectable Kickapoo village and cut down at least 430 acres of corn' " Craig 1893:348). It was not, however, until after General Anthony Wayne's victory over the northwestern tribes in 1794 that Kickapoo raiding activities against the settlers were curtailed. The following year they were persuaded to join the Indian Congress at Greenville and agreed to accept a $500 annuity (Gibson MS). In August, 1795, the Kickapoo and representatives of the "Wyandots, Delawares, Shawanoes, Ottawas, Chipewas, Putawatimes, Miamis, Eel-river, Weea's Piankashaws ,and Kaskaskias" met again at Greenville, Ohio, and agreed to sign a land cession treaty with the United States (Kapper 1904 b: 39). At this time, the Kickapoo consented to relinquish lands

claimed by them in Ohio in return for land in Illinois and a $500 annuity (Kapper 1904b:39).

By 1808, the destroyed Kickapoo village at Kathtippecanoe (later known as Prophetstown), located about ten miles above the present city of Lafayette, Indiana, had been rebuilt by the Shawnee Prophet, Tenshawatawa, and his brother Tecumseh, and their followers. About half of the Kickapoo claimed alliance with the prophet who was preaching that "power was given to him by the Great Spirit to cure all disease, to confound his enemies, and to stay the arm of death, in sickness or on the battlefield" (Brice 1868:170) while the other half of the tribe supported William Henry Harrison, new governor of Indiana Territory. After defeat at the Battle of Tippecanoe and with the start of the War of 1812, the Kickapoo dispersed into small bands, some moving south and west, some going to Canada with Tecumseh and the Prophet, while others remained in the area to harrass settlements in Illinois Territory. Throughout the War, the Kickapoo resisted the movements of the U. S. Military but by its close many Kickapoo villages in Illinois and Indiana were abandoned and most of the tribe migrated west of the Mississippi. It has been said of the Kickapoo that "they disliked the United States so much that when they left Illinois, they would not reside within the limits of our government, but would settle in Texas" (Beckwith 1884:136).

After signing treaties with the United States in 1815, 1816, and 1819 (Kapper 190b: 116, 131, 184), the Kickapoo were given land in Missouri. Once established in Missouri, in an attempt to combat territorial encroachment by white settlers, small bands of Kickapoo began ranging to the south. Some settled in Indian Territory, some in Texas, and some in northern Mexico. It has been noted (Wilson 1953:196) that sometime prior to 1820, a band of about 600 Kickapoo moved south and settled in Texas near Nacogdoches. In 1832, the Kickapoo relinquished 2,048,000 acres of Missouri land (ARCIA-1836:424) and agreed to settle on a reservation near Fort Leavenworth, Kansas.

By April, 1833, two bands of Kickapoo had arrived in Kansas — Chief Kisko's Missouri Kickapoo numbered about 400 and the Prophet Kennekuk's Illinois Kickapoo numbered

about 350 (Gibson MS). The Prophet and his followers accepted the reservation and quickly took the "road of the white man." The Kickapoo living in Kansas today are primarily the descendants of this band.[2] Kisko and his followers resisted the ways of the white man and insisted that the Kansas land was not as good as the Missouri land (Wilson 1953:95). Kansas for this band was simply a temporary place of residence before continuing west, for in 1837, a large part of Kisko's band left Kansas for the Red River on a hunting expedition and did not return (ARCIA 1839:501).

With the start of the Texas Revolution in 1835, many of the Indian tribes in Texas remained loyal to Texas and Sam Houston. A few of the tribes, however, allied with Mexico and took their orders from Cordova's negotiators. "One of the principal tribes to cooperate with Mexican agents was the Kickapoo" (DeShields 1912:270). Recurring depredations against the white settlers in Texas by the Kickapoo and other tribes led the Texas government to charge these tribes with actively conspiring with Mexicans envoys. One Kickapoo band was issued guns, ammunition, clothing, and rations by Mexican emissaries and were induced to join the Mexican army to serve against the Republic of Texas. While the Mexican Kickapoo band was striking the settlements of west Texas from the base in Morelos, another band, located in Indian Territory, was making raids into north Texas. The latter band joined the Seminole leader Wildcat (Coacoochee), making a total of 250 warriors, and migrated into northern Mexico in 1850 and were followed by 500 more Kickapoo later the same year (McReynolds 1957:263).

Late in 1862, about 600 Kickapoo residing in southern Kansas, in an attempt to avoid involvement in the American Civil War, left for Texas (Senate Document 1908c:1886). While camped along the Little Concho River, however, the band was attacked by a Texas Confederate patrol and "the Kickapoo started for Mexico, thinking that Texas had declared war upon them" (Senate Document 1908c:1886). In Mexico they were made welcome by Mexican officials, granted lands and in return were to render "the Mexican army valuable service in exterminating the Lipans and in subduing

and driving the Comanches beyond the borders of Mexico" (Senate Document 1908c:1886).

Two years later a different group of Kickapoo were to suffer from another unprovoked attack. In the fall of 1864, Chiefs Nokowhat, Papaquah, and Pecan, and some 700 followers protesting the Kickapoo Allotment Treaty (Kapper 1904a:637-641) had left Fort Leavenworth, joined forces in southern Kansas, and started to Mexico (Root 1932:155). According to one of the chiefs, " 'we traveled slowly along . . . hunting buffalo on the plains' " (Root 1932:155). By January 1, 1865, a camp site was established along Dove Creek, a tributary of the Concho River. On the morning of January 8th, the Kickapoo were attacked by Conferedate troops and the Texas State Militia (Pool 1950:367). The battle lasted throughout the day, the Texans retreated during the evening, and the Kickapoo broke camp and fled to Mexico sometime that night. The following morning, in over a foot of snow, the remains of the Kickapoo camp could be seen.

> They left more than $5000 worth of property in their camp, to wit: about 1,000 buffalo hides; 250 ovens and skillets; about 200 saddles, and other things too numerous to enumerate. Frying pans, tin cups and pans, axes, and coffee and mills, by the wagon loads. We found large numbers of their dead concealed in the surrounding thickets unburied. (Pool 1950:385)

Because of the unwarranted attacks on them in 1862 and in 1865, the Mexican Kickapoo, convinced that Texas had declared war on them, launched a new and vicious attack on Texas. It has been noted that "before the Kickapoo vengeance drive was finally sated, marauding bands raiding from their sanctuary in Coahuila across the International Boundary had spoliated millions of dollars worth of property, massacred hundreds of Texas citizens, carried into captivity countless children, desolated several tiers of counties on the Texas side along the Rio Grande, implicated the United States in a dispute with Mexico which saw the invasion of Mexican soil countless times by United States armed forces in hot pursuit of Kickapoo marauders, and provoked a high level diplomatic tiff which involved an embarrassed United States Congress, Secretary of State, and the President" (Gibson MS).

The situation became so bad that in 1870, Congress appropriated $25,000 to be used in collecting the Mexican Kickapoo and located them in Indian Territory (Foreman 1946:210). The Kickapoo could not be persuaded to go to Indian Territory so in 1871, General Phil Sheridan, Commander of the Army of the West, told Colonel Randle MacKenzie to stop the Kickapoo war on Texas and he is reported to have expressed his feelings as follows: " 'let it be a campaign of **annihilation, obliteration** and complete **destruction**' " (Carter 1935:422).

On May 17, 1873, after ordering his men to "grind their sabers to razor-like edges" (Haley 1952:209), MacKenzie and four hundred men crossed the border into Mexico. Disregarding international law, they traveled 150 miles into the interior of Mexico and on the morning of May 18th, attacked the Kickapoo village (Foreman 1946:211). Since a large number of warriors had left the day before on a hunting expedition, the villagers were virtually at the mercy of MacKenzie's troops. After killing nineteen Kickapoo men, capturing forty women and children, destroying the village, and driving the defenders into the hills, MacKenzie marched his troops and the captives (two and three on a horse) for four days and nights without sleep before they crossed the Rio Grande (Haley 1952:210). He took his captives directly to San Antonio where they were later taken to Fort Gibson, Indian Territory. Because of a desire to reunite with their relatives held captive at Fort Gibson and a lack of supplies and food, about three hundred Kickapoo agreed to migrate from Mexico to Indian Territory (Haley 1952:210). On August 28, 1873, 317 Kickapoo left Mexico for a new home in Indian Territory leaving about 280 of their tribesmen in Coahuila (Foreman 1946:211).

The Problem

The arrival of the Mexican Kickapoo in Indian Territory marks the creation of the **Oklahoma Kickapoo Indians** as a definable unit for historical analysis. Although not established on a reservation (Figure 1) until 1883 (Kapper 1904a: 844), for purposes herein, those Kickapoo Indians residing in Indian Territory (the Oklahoma Kickapoo) from 1874, are to be distinguished from the Kickapoo Indians residing in

Mexico (the Mexican Kickapoo) at the same time. This dichotomy is not simply a matter of convenience. Since the Oklahoma Kickapoo were responsible to an Indian agent and were constantly pressured by missionaries and other non-Indian agencies to "take the road of the whiteman" while the Mexican Kickapoo were not, the author, by limiting the problem of the Oklahoma Kickapoo, is afforded greater control of the cultural - historical data on which the report is based. Furthermore, in 1894 the Cherokee Commission [3] (ARCIA 1891:364, 1892:78) persuaded the Kickapoo to accept allotments of land on an individual basis (ARCIA 1894:255). This move by the government served to divide the Oklahome Kickapoo into two primary sociopolitical groups, the "Kickers" and the "Progressives" (ARCIA 1894:257, 1898: 251); the "Kickers" combined their lands and established a new village and the "Progressives" quietly accepted allotments. Since it was many years before these two groups were united, and then not under a traditional village type of organization, the village period of the Oklahoma Kickapoo may be confined to the years between 1874 and 1894, the period

Fig. 1. — Kickapoo Reservation in Oklahoma Territory.

with which this report is concerned. There are, of course, several inherant theoretical and methodological problems evident in limiting a study to a particular time period. But, in light of the historical circumstances surrounding the arrival and establishment of the Oklahoma Kickapoo in Indian Territory, coupled with a need for maximum control of the direct and indirect evidence on which any study of this type is based, the approach followed herein seems the most feasible for this report.

Historical material pertaining to the Oklahoma Kickapoo is available (e. g., Gibson 1963, Senate Documents 1908a, 1908b, 1908c, ARCIA 1838-1898) and is of particular use in illustrating Kickapoo-White relations. For example, it is easily demonstrable, from historical documents, that a very inharmonious relationship existed between the Kickapoo and the Whites between about 1874 and 1894. The following from different Indian agents will serve to illustrate.

> I visited them the next day after their arrival, to talk with them, ascertain something of their condition, and provide for their needs. When I arrived at their camp I found them holding a religious feast, which was to continue from sunrise until sunset, for the purpose, as their chief said, of "thanking their God that they had got through alive."
> (ARCIA 1875:284)

> They are blanket Indians, and have heretofore been recognized as a restless wild tribe, the only tribe of this agency [4] to which rations are issued.
> (ARCIA 1880:91)

> The Kickapoo are the only Indians that absolutely refuse to send their children to school. Efforts have been made by my predecessor, religious societies, and myself without any perceivable success. They have adopted the white-man's way as to work, but imagine, should they send their children to school, that the Great Spirit would abandon them, and then the world would come to end.
> (ARCIA 1886:144)

> This is the wildest, and most uncivilized tribe under this agency, being entirely controlled by a non-progressive element. They are suspicious and stubborn beyond reason. They refuse to treat with the Cherokee Commission, and have always positively refused to be en-

umerated under the census laws.
ARCIA 1890:200)

There is, however, little information, from any period in Kickapoo history, devoted primarily to Kickapoo culture. Except for a monograph on the Mexican Kickapoo (Ritzenthaler and Peterson 1956), sources of this type are either very limited in the extent of information presented (e. g., Jones 1913, 1915, Pope 1958-59, Goodman 1960) or unpublished (e. g., Foreman 1937, 1938, Marriott 1937, Wilson 1953, Wallace 1963). Therefore, the purpose of this report is to present an ethnographic reconstruction of the Oklahoma Kickapoo Indians as a means of filling a void in the general body of anthropological literature and thereby making available cultural information on a small group of American Indians that has to this date been greatly overlooked by anthropology.

THE OKLAHOMA KICKAPOO: 1874-1894

LANGUAGE

Linguistic Affiliations

Upon their arrival in Indian Territory from Mexico in 1874, the Kickapoo spoke a dialect of the Algonquian language stock. Algonquian, consisting of thirteen related languages, may be divided into the following linguistic groups: Central Algonquian, Eastern Algonquian, Blackfoot, Cheyenne, and Arapaho (Michelson 1912:229). The Kickapoo were most closely allied linguistically with the Central Algonquian speakers, i. e., "the Algonquian tribes that live or have lived about the Great Lakes, particularly in the adjoining regions west and south, and now embraced by the territory of the states of Michigan, Wisconsin, Illinois, Indiana, and Ohio" (Jones 1911:740). The following six languages are usually considered Central Algonquian: (1) Cree-Montagnais-Naskapi, (2) Menomini, (3) Fox-Sauk-Kickapoo, (4) Shawnee, (5) Potawatomi, and (6) Ojibwa-Ottawa-Algonquian-Saltueaux (Voegelin 1941:18). The Kickapoo's oldest linquistic affiliates were, therefore, the Sauk and the Fox (Jones 1911:740).

THE VILLAGE

The Village Setting

The daily activities of the Kickapoo were carried out in and around their village. Each year, in the same location, both a summer village and a winter village were constructed. During the early fall, the summer houses were dismantled and replaced by winter houses. In March, the winter houses were taken down and replaced by summer houses. Around both the summer and winter house, there was a semi-circular yard area which was kept clear of sticks, stones, and grass. The houses were arranged in straight rows and the doors of the structures were always facing east. Within the confine of each yard, a small cook hut was generally constructed to the northeast of the house door during the summer months.

To the west of the village, small menstruation and birth huts were constructed. To the southeast of the village, in time of communicable disease, an isolation hut for the sick was constructed. When constructed, sweat huts were generally placed in this same area.

In the center of the village, in a house not unlike the other houses in the village, lived the hereditary chief and his wife or wives. Immediately south of the chief lived his first assistant and immediately to the northwest, lived his second assistant. A member of the Tree Clan [5] lived in the house immediately west of the chief and a member of the Eagle Clan lived in the first house to the east. The remainder of the tribal members lived wherever they chose in the village.

Although the male shaman was not socially required to live in a certain area within the village, as a general rule he lived near or at the southeast corner of the village. From this position, he could easily attend the people living in the isolation hut and the people to whom he prescribed sweat baths. There is no evidence to suggest that a female shaman lived in any particular area of the village.

Summer house. — Following the Spring Feasts held in late February or early March, the Kickapoo began dismantling their winter houses and started construction of their summer houses.

The poles constituting the frame of the summer house were

selected for their straightness and their length. These poles were acquired by cutting down young trees, removing their branches, and stripping the bark. The poles that served as the framework for the walls of the house, when placed in the ground, extended upward about ten feet. Besides these general wall support poles, two poles about thirteen feet long having a fork at one end were selected and used as major roof supports.

After the frame support poles had been selected and prepared for use, about eight or nine of them were placed in the ground forming a rectangular area measuring about twenty feet by fifteen feet. One of the long forked poles was placed in the ground, in the center of what would be later the west wall of the house, with the fork extending upward. The other forked pole was then placed in the ground approximately fifteen feet east of the first forked pole. This pole was about five feet inside the east wall of the house. After placing a long pole in the fork of the two forked poles, constituting the central roof beam, the frame of the house was completed by securing poles horizontally to the upward end of the major wall support poles and by extending some from the central roof beam to the top of the walls. Inside the house frame, about eight feet above the ground, a pole extending between the two forked poles was tightly secured. This beam served as a rack from which kettles and pots were hung for purposes of ceremonial cooking. Strips of bark were used to tie the frame poles together.

With the completion of the frame of the summer house, young American elm trees were cut down and split lengthwise. These split elms, bark to the outside, were placed upright, between the wall frame posts on all four sides of the house and served as the walls. A three foot wide space was left in the east wall of the house which functioned as an entrance to the house.

The roof of the summer house was made from the bark of the American elm tree. During the spring a single cut was made around elms measuring from one to two feet in diameter at the bottom of the trees and just below its lowest branches. A single vertical incision was then made between the two previous incisions; thereby, allowing the bark to be peeled

off the tree in one piece. The bark was kept wet and pliable so that it was a relatively easy matter to place it on top of the house and shape it to fit the frame. A small opening was left near the center of the house which served as a smoke hole.

In the interior of the house, scaffolds measuring about three feet high and three feet wide were constructed against the north, west, and south walls. Straw, followed by reed mats was then placed on top of the scaffolds. These scaffolds constituted the setting and sleeping area for the individuals living in the house.

Connected to the east wall of the house was a shed or porch approximately the same width as the house and about fifteen feet long. This connecting shed or porch had a dome-shaped bark roof as did the house but it was not enclosed. Scaffolds, the same size and height as the ones inside the house were constructed just under the shed on the north and the south.

When the house was completed, it had a dome-shaped roof, straight walls, and including the attached shed, was approximately thirty-five feet long, fifteen feet wide, and twelve feet high in the center.

Winter house. — By mid-October, the Kickapoo had completed construction of their winter houses and were prepared for the cold months to follow.

The frame of the winter house was made either from small persimmon or willow tree saplings. Once these small trees were cut, brought to the village and stripped of their bark, they were placed in the ground in a semi-circular fashion. This semi-circular area would encompass approximately twenty feet by fifteen feet. The poles on the north were bent toward the south and the poles on the south were bent toward the north. Where the poles met, they were tied together with the bark previously stripped from the saplings. The poles on the west and the east were then bent toward the center of the house and they were also tied with bark. A number of saplings were then woven between the primary frame poles. The end product of the bending and tying of these poles near the center of the house and the working of saplings between these poles was a dome shaped frame

The frame was then covered with mats made from the stems of the cattail. Traditionally, these mats were made by placing the cattail stems in a row and sewing them together with strips of bark, but by the time the Kickapoo arrived in Oklahoma fiber cord was available and this was substituted for the bark strips. These mats, ranging in size from four to six feet wide and from five to eight feet long were soaked in water and shaped over the frame of the house. An opening was left in the east wall serving as the entrance. A small opening would be left in the center of the roof of the house so that smoke would have an outlet. Occasionally, two openings would be left in the roof if the family felt it would be necessary to have two fires in the house.

Inside the house, about six feet apart, two poles were placed upright in the ground. A horizontal beam was then placed across the top of these poles. As in the summer house, this cross-bar served as a support from which to hang kettles and pots.

Scaffolds were not built inside the winter houses. Instead, grass or straw was placed around the floor near the walls and then covered with reed mats. These mats functioned as a place to sit and sleep.

Cook house. — As a general rule, just to the northeast of the summer house, within the yard area, a small cook house approximately eight feet square was made like the shed connected to the summer house, i. e., it was not enclosed and it had a dome-shaped roof. Inside the cook house, two large poles with a forked end were placed about six feet apart east-west. A beam was then placed between these two forks allowing a support from which to hang the cooking pots and kettles. During the summer, everyday meals were cooked in the cook house and ceremonial meals were cooked inside the summer house.

Unless the family was extremely large, no cook house was constructed during the winter. All cooking, everyday and ceremonial, was done inside the house. If the family was so large that it was impractical and inconvenient to cook in the house, a small cookhouse would be constructed following the same pattern as the winter house, i. e., it had a cattail covering.

Menstruation and Birth hut. — The menstruation and birth huts were always located west of the village and the same huts were used during both the winter and the summer. These huts were patterned after the winter houses except that the floor plan was round instead of oval and they were much smaller. Each house was approximately six feet in diameter and eight feet high. Generally they were covered with cattail stems but, occasionally, bark would be used. The door opened to the east.

Isolation house for the sick. — During times of spreading communicable disease[6], an isolation house was constructed southeast of the village. According to informants, since the shaman lived in the southeast corner of the village, the isolation sick house was placed in an area that would be easily accessible to him. During the winter, the isolation house was a winter house and during the summer, it was a summer house.

Sweat hut. — Sweat huts could be constructed at any place on the periphery of the village, but, generally, they were located to the southeast of the village. These huts were made by constructing a dome-shaped frame of saplings and then covering it with skins or canvas. They had a semi-circular floorplan, were dome-shaped, and were about five feet long, four feet wide, and four feet high.

Material Culture

By the time the Kickapoo finally settled in Oklahoma, they had been in contact with Europeans for over two hundred years. Because of this, the manufacture of many traditional material goods had practically disappeared. Besides the living structures already described, the Kickapoo also made their own clothing, bows and arrows, baskets, mats, ladles and bowls, and jewelry. As a general rule, however, they utilized the supplies issued to them by the U. S. government. Late in 1874, the Oklahoma Kickapoo were issued such items as thimbles, ear bobs, buttons, coffee mills, handled hoes, steel traps, pans, blankets, twine, calico, saws, shovels, nails, snaps, and a few wagons (OHS 1874). They were also issued some horses and mules (OHS 1874).

For everyday purposes, Kickapoo men wore leggings, moccasins, and a breechcloth made from buckskin along with a shirt made either from buckskin or dry goods obtained from

trading or from the U. S. Government. The leggings were made by cutting two pieces of buckskin into the shape of the legs of a pair of trousers and then stitching them together with sinew or thread. Except for a buckskin fringe on the leggings, there was no decoration on the leggings or the breechcloth. The shirts, extending a few inches below the waist, had long sleeves and a v-shaped neck. Both the buckskin and the broadcloth shirts were made by simply sewing two pieces of cloth or buckskin of the same size and shape together. Shirts for everyday use were seldom decorated, although a woven sash of a non-functional nature was worn around the waist. The moccasins were soft-sole and made from a single piece of buckskin. They were shaped to fit the foot and stitched with sinew only on the face and down the heel. During the winter, leaves were placed in the moccasins to help keep the feet warm. Many of the men wore ear-rings and bracelets made from German silver.

For ceremonial purposes, the leggings and moccasins worn by men were usually lightly decorated with beads. The breechcloth was made from black felt and decorated with ribbon applique. The shirts were the same style as the everyday shirts but were usually made from a brightly colored (single color) piece of broad cloth and had different colored ribbons attached on the front and on the sleeves. The men also wore brightly colored silk neckerchiefs with a German silver slide.

A two piece dress made from broad cloth and buckskin moccasins constituted the everyday wearing apparel of Kickapoo females. The two piece dress consisted of a skirt and a jacket or blouse. The skirt extended from the waist almost to the ground and was made either from one or two pieces of material. The jacket had three-quarter length sleeves, a rounded neck, extended a few inches below the waist, and was made by sewing two pieces of cloth cut in a like pattern together. The moccasins worn by the women were basically just like those worn by the men. Women also wore ear-rings and bracelets made from German silver.

For festive occasions, the women dressed just as they did under normal circumstances except that their dresses were brightly colored and were embroidered and appliqued. Moc-

casins were beaded and appliqued. Their finest German silver jewelry, consisting of ear rings, bracelets with shell sets, pendants, and pins were also worn at this time. The women frequently wore long ribbons, attached with a comb to the back of their head, that extended almost to the ground. These long ribbons were in turn decorated with beads and smaller ribbons.

Kickapoo children dressed like their parents except during the summer when they would often go without clothing. After a child reached adolescence, however, he or she was expected to begin dressing in accordance with their sex. Ceremonial clothing was generally not acquired until after puberty.

As was noted earlier, the primary crafts produced by the Kickapoo after they settled in Oklahoma were baskets, mats, wooden bowls and ladles, and bows and arrows. The baskets and mats were made from bulrush by a twilling technique and were colored by dyes produced from different containers used for storage and carrying purposes. The mats were about seven feet long, three and a half feet wide, brightly colored, and were used inside the summer and winter houses as a comfort on which to set and sleep. Bowls and ladles were made from ash wood and were used for eating and drinking. The Kickapoo made a "simple" bow having a bowstring made from buckskin. The arrows had metal points and fletching depended upon the use of the arrow.

Economic Organization

All economic activities were based on age and sex. All individuals, both male and female, passed through the age grades of infancy, childhood, adolescence, adulthood, and old age. No work was expected of infants or children but when they reached adolescence they assumed the role of their given sex by contributing their energy to the economic output of the household.

The primary economic responsibility of the male head of the household was the securing of wild game. Deer, rabbit, raccoon, squirrel, quail, duck, turkey, and buffalo and bear when available, constituted the basic meat diet of the Kickapoo. Skunk, fox, and beaver were also killed but only for their fur as the pelts of these animals were traded for food, clothing, and in some cases, for money. Bows and arrows

and steel traps were the primary implements used in killing these animals. Deer and bear were occasionally captured in a pit covered with branches. Rifles were used for hunting when available.

Hunting activities were carried on through all seasons of the year and done either individually, in twos or threes, in small parties, or in large parties. Each year, prior to the arrival of the Kickapoo in Oklahoma and possibly after their arrival, there was one annual hunting expedition in which most of the adult males in the village participated. This was an annual deer hunt that took place during the early fall and lasted about a month. According to informants, prior to the placement of the Kickapoo in Oklahoma, women and children accompanied the men on this trip and it sometimes lasted up to three months. By the late 1870's, however, women and children generally remained in the village and the menial chores, such as cooking and keeping the living area clean, became the responsibility of young boys who were on their first or second hunting expedition.

Before the men left on their annual deer hunt, a hunt leader was selected on the basis of his proven ability in warfare and hunting. This man had complete authority during the time of the hunt and it was he who guided the party and selected the hunting areas. Before the party left the village, prayers were offered to certain deities to insure a successful hunt and scouts were sent out ahead of the main party to locate the deer. Once a large number of deer were spotted, the scouts would notify the main party and wait for their arrival. The hunters would position themselves downwind and wait for a smaller group of hunters to go upwind and frighten the deer toward them. The deer would then be slain. An attempt was made during this hunt to kill enough deer so as to have ample food and material for clothing for the coming winter.[7]

After the deer were killed, they were skinned, quarter sectioned, and hung up to dry. Before the women stopped going on the deer hunt, the meat was immediately cut into strips and dried, always leaving the ribs intact to be used later for ceremonial purposes. Without the women to aid them, the men preserved the meat as best they could until

they returned to the village at which time it was turned over to the women. Following the arrival of the hunters back in the village, a prayer was said in which the activities of the hunting party were recounted.

Except for the one large hunting trip in the fall, most of the hunting activities of the Kickapoo were done individually or in small parties usually consisting of a number of related men culturally defined as "brother". Although the party was not formally organized as was the annual deer hunting party, a prayer was always offered before and following the hunt. The hunting trips generally lasted from a day to a week and the animals were either skinned and butchered on the spot or brought back to the village intact. All fishing was done on an individual basis.

Besides their hunting activities, the men also assisted the women with the heavy work around the village, made bows and arrows, wooden bowls and ladles, did silver work, and took care of the maintenance of their tools and weapons.

Kickapoo women did most of the work in and around the village. Their primary economic responsibility was the planting, cultivating, and harvesting of corn, pumpkin, and beans. Although the men assisted the women in clearing an area that was to be used for farming of trees, stumps, rocks, and in breaking the soil, it was the duty of the women to see that crops were planted, cultivated, and harvested.

After the crops were harvested by the women in the late summer and early fall, the yield was dried and some of it was stored for the coming winter. Corn was always harvested in the late afternoon. The ears were brought to a central area in the village, shucked and boiled. The following morning, the kernels were cut from the ear and they were placed on a skin or canvas to dry for two or three days. It was then placed in skin bags and stored. Pumpkins were cut into strips two or three inches wide, hung up to dry, and then stored. Beans were simply taken from the shell, dried, and stored.

Another major economic, as well as religious, responsibility of Kickapoo women was constructing the summer and winter houses and keeping the house and yard area clear of all debris. The women also butchered the animals, cooked the

food (except during certain ceremonies), collected wild berries and roots, collected and cut fire wood, carried water, tanned skins, and made clothing, baskets, and mats.

By the time Kickapoo children passed into adolescence, they began assuming the roles of their respective sex. Young girls assisted their mother and older sisters in their daily duties, i. e., cleaning, cooking, gathering berries, etc. Young boys were not expected to be of much assistance beyond doing menial chores such as helping in getting wood, water, and helping gather cattail for the houses and rush for baskets and mats.

Property

The Kickapoo conceived of two kinds of property: (1) communal property, and (2) personal property. Communal property consisted of the reservation, i. e., the land, flora and fauna. Personal property was based on a division of sex. The personal property of women consisted of the houses, household implements, and personal items such as clothing and jewelry. The personal property of men consisted of horses, tools, weapons, apparatus for hunting, fishing, trapping, and personal items such as clothing and jewelry. The ownership of agricultural implements was ill defined. Apparently they belonged to individuals or families, but were frequently passed from individual to individual because lending and borrowing of such items was common. Religious paraphernalia such as "sacred bundles" did not belong to individuals. They were placed in the possession of the tribe by supernatural powers for safe keeping and were considered tribal property.

The land, although considered communal, was allotted to individuals and farmed on an individual family or joint family basis. Farming on a joint family basis resulted in equal sharing of the work and equal sharing of the produce.

When hunting was done on a communal basis, the person who first shot the animal received first choice of meat and the rest was divided among the men who helped kill the animal.

Although the Kickapoo had a defined concept of personal property, it was not uncommon for both males and females to share the fruits of their labor along with personal items

such as tools with certain consanguine and affinal relatives.

Daily Life

The average day of a Kickapoo woman began immediately after sunrise when she arose, prior to her husband and children, and began to prepare the morning meal. This meal, prepared in brass kettles the day before, consisted of a meat, corn, and pumpkin soup, baked bread, and coffee. During the winter, the meals were eaten inside the house and in the summer, under the shed attached to the summer house. According to Elizabeth Text, Kickapoo Field Matron in 1892, "several will sit . . . around a wooden bowl and eat their soup in their respective turns from one wooden ladle" (ARCIA 1892:407).

Following the morning meal, the respective ages and sexes in the village would go about their daily activities. The women would wash clothes in the creek, clean the house, sew, pick berries, tan skins, cook a noon meal which was the same as the morning meal, and tend to the other economic responsibilities previously described. Men would go about their business of visiting, hunting, and fishing. Children were left alone to do as they pleased except when asked to help with the work load.

The Kickapoo evening meal was the basic meal of the day. Although it consisted of the same foods prepared in soup form, as the other meals, a larger quantity of food was generally consumed. Some form of home-made bread always accompanied this meal (left over bread was used the following morning). Having access to flour ,e. g., 4,000 lbs. issued to the Kickapoo in 1874), bread was baked in iron ovens placed over open fires. Often, the dough would be mixed with crushed wild grapes, persimmons, or other berries. This dough was made into patties and was immediately baked or stored for future use.

Matters of personal hygiene were taken care of following the evening meal. Since the evening was considered a time of relaxation, both males and females bathed at this time, combed their hair, and changed their clothes. Both Kickapoo men and women wore their hair in a single braid at the back. A woman's braid usually extended a few inches below the shoulders and a man's braid extended to the shoulders.

During the evening while the adults gossiped and visited and the young men courted the young women, the children and adolescents gathered around the old men in the village and listened to stories and received advice on how to live a good life.

A few hours after dark, the villagers would settle down and prepare for the night. When the families retired, the male head of the household slept near the west wall (an honored position in the house) and the women and children slept where they could find a place.

SOCIAL ORGANIZATION

The Dual Division

All of the Kickapoo were divided into two major groups; the oskas and the kiskoa. The oskas painted their faces with charcoal for religous purposes and associated themselves with the hue black and the direction south. The kiskoa covered their faces with white clay for religious events and associated themselves with the hue white and the direction north.

There is no evidence to suggest that these two groups were exogamous or regulated marriage in any manner. One informant explained the oskas and the kiskoa as follows:

> That's just like the Democrats and the Republicans. I'm oskas, I just like a Republican, and she's a kiskoa, she's just like a Democrat. When they have a ball game (La Cross) the kiskoa and the oskas play against each other.

Apparently, this dual division of the tribe functioned only as a means of dividing individuals into two groups for the purpose of competing in secular and religious games. For example, during a boy's adoption ceremony a bow and arrow contest was held. In this game, boys that were members of the oskas competed against boys that were members of the kiskoa. One informant suggested that "the oskas would live on one side of the village and the kiskoa would live on the other," but other informants did not verify this belief.

Membership in either group was determined by the manner of an individual. "Which ever side you happen to be on when you got your name in the naming ceremony, that's what you are the rest of your life." In other words, if the namer

was a kiskoa, the namee would be a kiskoa. Ritzenthaler and Peterson state for the Mexican Kickapoo that "if the namer is Black, the first-born will be a Black. If the wife is a White, she can give her moiety to the second-born. If, however, she is a Black, the second-born is also Black" (1956:45). There was a similar pattern found among the Fox, i. e., "the regular way is to put the first-born in one class and the second-born in the other" (Jones 1939:81). Although informants did not definitely verify such a pattern for the Oklahoma Kickapoo, it was probably the case when they permanently settled in Oklahoma.

Bundle Societies and Clans

The Kickapoo had four sacred bundle societies and a number of clans [8]. Presently, neither the bundle societies nor the clans are exogamous. There is, of course, the possibility that either one or the other of these groups were once part of a gens system that regulated marriage. No informant, however, recollects this ever being the case. One of the oldest Kickapoo couples (early eighties) are members of the same clan but of a different bundle society.

Although the bundle societies are well known to many of the Kickapoo today, all informants agreed that the names of these societies could not be translated into English. The terms applied by the Kickapoo to these societies are as follows:

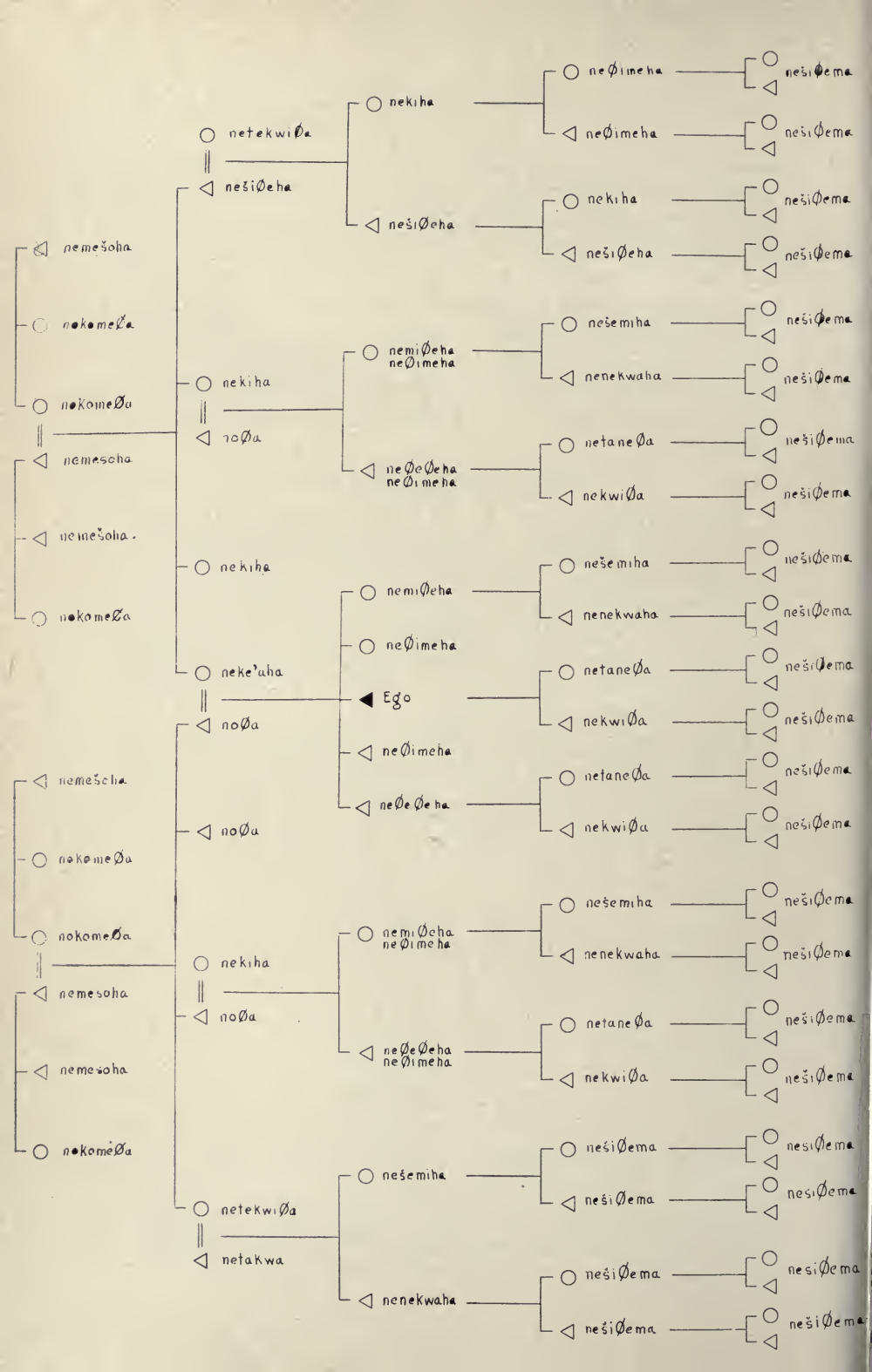
nitoškwa	pačakwia
neøoøa	nežakwa

Informants listed the following clans: [9]

Blackberry	Eagle
Buffalo [10]	Bear
Wild Turkey	Thunder
Mankind	Raccoon
Wolf	peakemo (?)
Tree	Water

One informant explained the bundle societies as follows:

> In the beginning, there were four religious groups. These was created as a result of those that wanted to gain knowledge; these that fasted. The purpose of those religions was to create a better life here on earth for the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people. Each of these four religious groups was given a religious bundle. Each group was given a bundle. They gave them some herbs and different medicines to put in these bags to relieve the suffering. They also gave them two gourds and some religious tobacco to put in the bags.

Another informant said that the difference between the bundle societies was like the difference between "a Baptist, Methodist, Presbyterian, or Catholic."

Those clans were explained by an informant as follows:

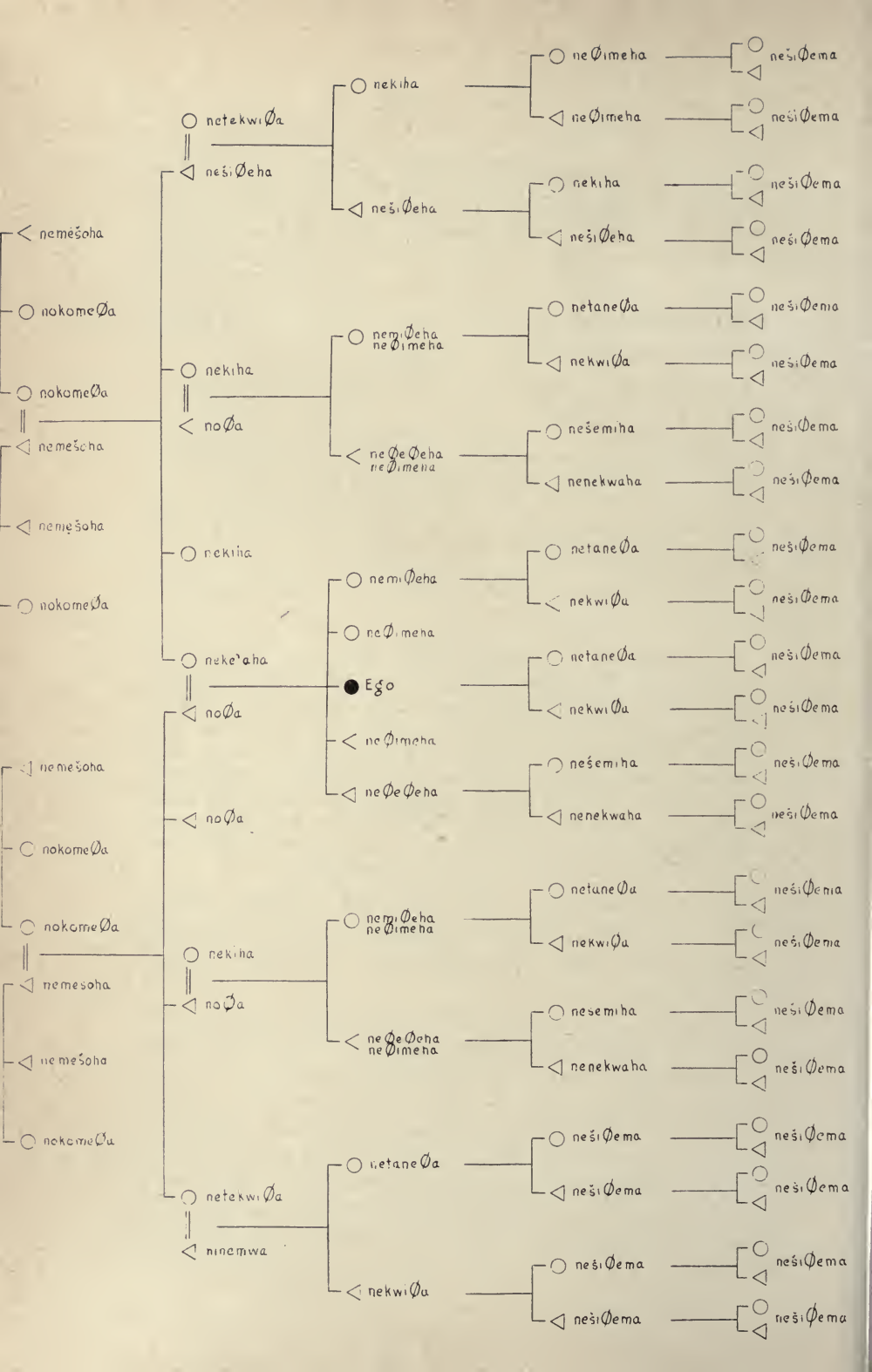
Those clans is due to the origination by the Creator. He wanted each one who belongs to that clan that their name comes from of the thing that the clan is named after. If you are a member of the Blackberry Clan, you name should come from the Blackberry. It could be the berry itself or anything that pertains to it.

A third informant had the following to say in regard to the clans:

You become a member of one of these clans when you are named. Sometimes the father will name the first child but it don't really make any difference. When you're named, you become a member of the clan of the person who names you. A lot of the time the uncle will name the baby and he will be more or less a godfather to the child. I belong to the Eagle Clan. This is the only child I have and I was going to name him but my father [Blackberry Clan] wanted to name him so we talked to my wife about it and my father named him.

There is no evidence suggesting that anything said regarding the bundle societies and clans by the three informants is incorrect for other individuals and genealogies support their comments.

In summary, the Kickapoo made a distinction between their bundle societies and their clans. The bundle societies, crossing clans, were conceptualized as formal religious sects, each having a different leader. The clans were also formally organized but the only relationship between the individuals and their clan was that their names were all derived from a common source, e. g., all members of the Water Clan would derive their names from some aspect of water [11]. There is no evidence to suggest that food taboos were associated with clan animals.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The Kinship System

The Kickapoo had an Omaha type (Eggan 1955:4) kinship system (Figures 2, 3, 4). It was similar to the kinship system of the Fox (Tax 1955:243-258) in terminology and behavioral patterns. Kickapoo terms of reference were as follows:

neméšoha	grandfather
nokómeøa	grandmother
noøa	father
neké'aha	mother
nekwiøa	son
netáneøa	daughter
netékwiøa	father's sister
noøa	father's brother
nesiøeha	mother's brother
nekiha	mother's sister
nešiøema	grandchild
netótema	sibling
neøéøeha	older brother
nemíøeha	older sister
neøímeha	younger sibling
nenékwaha	son of sibling of opposite sex
nešémiha	daughter of sibling of opposite sex
néwa	wife
nenápema	husband
nítakwa	sibling-in-law of same sex
nínemwa	sibling-in-law of opposite sex
neméšoma	father-in-law
nekóma	mother-in-law
nenékwana	son-in-law
neøemha	daughter-in-law

Siblings. — Siblings could refer to one another as nototema [12] but, generally, an age distinction was made. Both a male Ego and a female Ego called younger siblings neøimeha. When referring to older siblings, a sex distinction was made. Older male siblings were neøeøeha and older female siblings were nemiøeha. These terms were also applied to the children of anyone Ego called noøa ("father") or ("mother").

Parents-children. — The term neke'aha ("mother") was restricted to Ego's own mother. The term noøa ("father"), however, was applied to his or her father and anyone his or her noøa called "brother". Ego's mother's sister and anyone

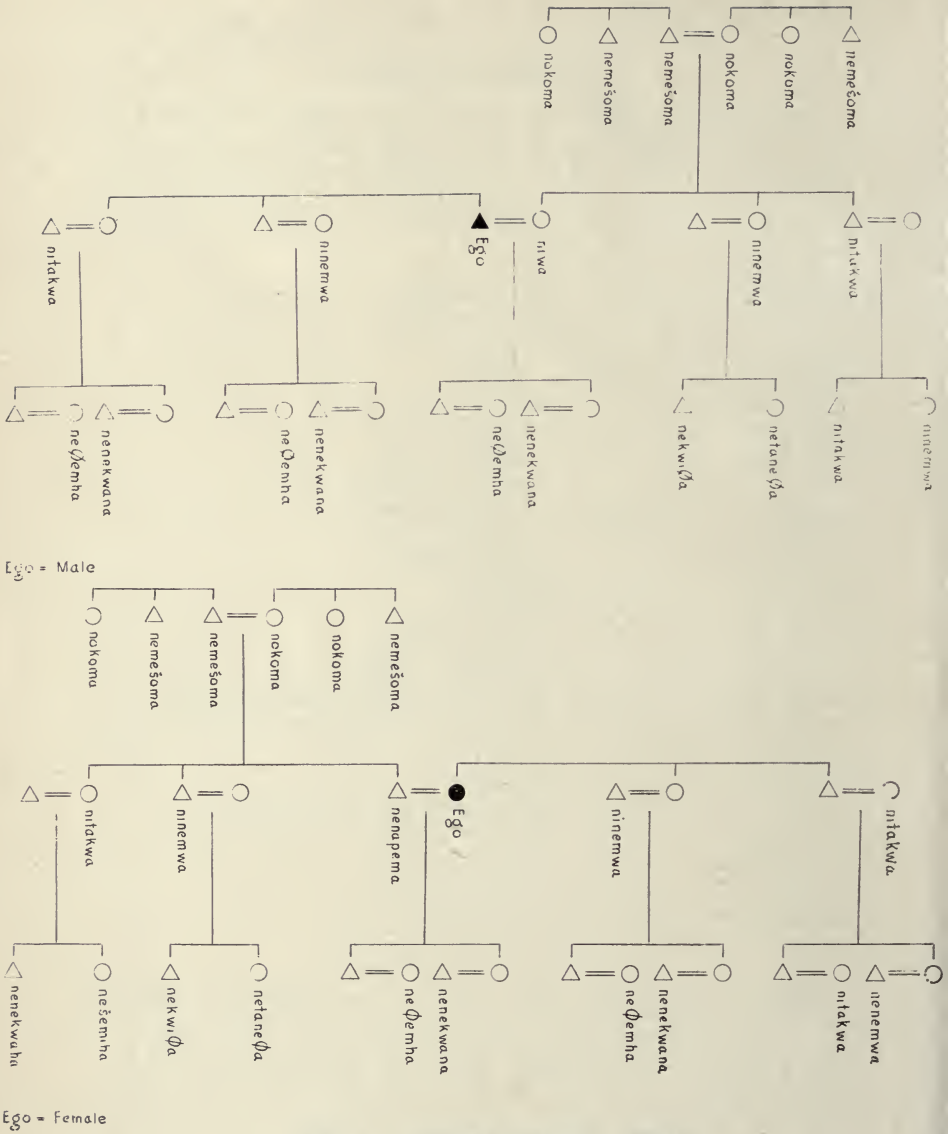

Fig. 4 — Kinship System: Affinal

she called "sister" was referred to as nekiha ("mother's sister"). This term was also applied to the daughter of anyone Ego called nesiøeha ("mother's brother").

Uncle, aunt-nephew, niece. — The term netekwiøa ("father's sister") was applied to Ego's father's sister as well as to anyone noøa ("father") called "sister". A male Ego called "father's sister's children" nenekwaha ("cross-nephew") and nesemiha ("cross-niece"). A female Ego called "father's sister's children" nekwiøa ("son") and netaneøa ("daughter"). Ego's mother's brother was called nesiøeha ("mother's brother") and this term was applied to his son, and his son, etc. The terms nenekwaha ("cross-nephew") and nesemiha ("cross-niece") were also applied to the children of siblings of the opposite sex.

Grandparent-grandchildren.—The terms nemesoha ("grandfather") and nokomeøa ("grandmother") were applied by Ego to both his maternal and paternal grandparents. The reciprocal of both terms was nesiøema ("grandchild"). The grandparent terms were also applied to the siblings of nemesoha ("grandfather") and nokomeøa ("grandmother"). The reciprocal ramained consistent.

System of affinity. — A male Ego called his spouse newa ("wife") and she called him nenapema ("husband"). This is the only case in which these two terms were used. It was also possible for a male Ego to call his wife wičayaka ("spouse") and she would apply the same term to him. The terms nemesoma ("father-in-law") and nokoma ("mother-in-law") were applied by Ego to his or her spouses's father and mother as well as to their siblings. The reciprocal terms of mother-in-law and father-in-law were nenekwana ("son-in-law") and neøemha ("daughter-in-law").

A male Ego and a female Ego applied sibling-in-law terms to siblings acquired by marriage and to the husband of netekwiøa ("father's sister"). A sibling-in-law of the opposite sex was called nimemwa ("brother's wife or sister's husband") and a sibling-in-law of the same sex was called nitakwa ("brother's wife or sister's husband"). The reciprocals were the same.

Kinship Behavioral Patterns

As in all societies, the Kickapoo had a number of familial

obligations with regard to each individual's relationship with other individuals. In general, among the Kickapoo, there was a feeling that all individuals should be "good to" and "respect" all of their consanguine and affinal relatives. This encompassed practically everyone in the tribe. These generalized relationships, of course, were further subdivided into personal relationships.

Brothers. — Although brothers as young boys played together and came under the same supervisional forces, as they grew older there developed between them a certain degree of social distance. The relationship can best be described as mutual respect for one another. Although they might identify with one another, they were socially remote from one another, i. e., a feeling of friendship existed between them but it was not not carried to the point of joking freely or discussing matters of sex with one another. A boy was expected to look to his older brother for guidance and obey him to some extent. For the respect paid him, the older brother was expected to look after his younger brother and help teach him the things he would be expected to know when he became an adult. As the brothers became older and the younger brother became an adult and married, this relationship became stabilized and mutual respect existed.

Sisters. — The relationship between sisters was very much like that between brothers except it was less formalized. Sisters were more apt to joke with one another than did brothers. The older girls in the household were expected to help instruct their younger sisters in matters pertaining to daily living. The relationship between sisters changed little after marriage.

Brother - sister. — The most formalized sibling relationship was between brother and sister. Although there was no avoidance of one another, joking, discussing sexual matters, and interacting on what might be considered a friendship basis was prohibited. This formal relationship was somewhat relaxed between brothers and sisters of a markedly different age for there was more overt affection shown one another. Since girls assisted their mothers in economic and household duties, they were expected to sew and cook for their brothers. Among adult siblings of opposite sex, as was

the case in the brother-brother relationship, a mutual respect attitude developed.

Father - son. — The father-son relationship was very much like the relationship between older brother and younger brother. The father would instruct his son in the duties and skills necessary to become an adult. It was a relationship that demanded respect from the son and guidance and advice from the father. If the son misbehaved, the father acted as disciplinarian. Punishment usually consisted of the father making the child fast for one or two meals.

Father - daughter — This was a very formalized relationship. Although the father gave advice to his daughter, it was channeled via his wife to the daughter. If the daughter was imprudent, the father would not punish her directly but would tell the girl's mother to act accordingly. The mother would generally blacken the girl's face and make her fast (Michelson 1923:282).

Mother - son. — The mother - son relationship was much like the relationship between a boy and his older sister. Although somewhat formal, it was much less so than the relationship between father and son. If a boy was being punished by his father, his mother could interfere if she felt that the punishment was too severe.

Mother - daughter. — This relationship was semi-formal but less so than the father-son relationship. Since a mother and her daughter were thrown together throughout most of the day in economic pursuits, the formal aspect of this relationship was somewhat relaxed. It was the responsibility of a mother to prepare her daughter for adulthood and the daughter would reciprocate by showing respect to her mother.

Grandparent - grandchild. — This was one of the "warmest" relationships to be found among the Kickapoo. Old age was looked upon as a reward for living the "good life" and people who reached old age were highly respected by all members of the society. Grandchildren were valued and often cared for by their grandparents. A display of affection was the rule in the grandparent-grandchild relationship. An individual looked to his grandparents for advice and council when troubled about such matters as "love", sex, and other personal problems. Individuals would always see that

their grandparents were cared for and would help them carry water, chop wood, build houses, and etc. Although this was a very warm relationship, the old people were given their "due respect" and obscene joking was prohibited.

Father's sister, mother's brother - nephew, niece. — The relationship between Ego and his or her mother's brother and father's sister may be considered a "mild" joking relationship. This relationship, of course, did not exist between Ego and his father's brother or mother's sister because the Kickapoo kinship system classified Ego as the son of father's sister and mother's sister. The relationship between Ego and his father's sister and mother's brother was a "mild" relationship as compared to a "true" joking relationship because obscenity and bodily contact was prohibited. There was general harrassment, joking, and trickery between Ego and his or her father's sister and mother's brother. This was especially the case when large numbers of individuals gathered together in the same place. One male informant in discussing his relationship with his father's sisters said, "They single me out and pick on me. Sometimes I would call her a witch and she would just laugh."

Siblings-in-law. — There was a pronounced joking relationship between siblings-in-law. Siblings-in-law of the same sex would joke with one another, play tricks on one another, and were allowed to be as obscene as they wished. The following from one informant clearly illustrates the joking relationship between siblings-in-law of opposite sex.

> A man can tell his sister-in-law, "I don't like you; I don't like to be around you," and she can't get mad. She just laugh. He could grab her by the hair and say, "I sure am glad to see you, Honey — maybe you want to sleep with me tonight?" She could say that was alright but it don't mean nothing. She just laugh.

Parents-in-law — children-in-law. — This was a formalized relationship of mutual respect. Although there were no strict avoidance rules, joking was not allowed. The restraints between parents-in-law and children-in-law of opposite sex were somewhat more pronounced than when they were of the same sex. Even though there were no strict avoidance rules, verbal and physical interaction between parents-in-law and children-in-law was kept at a minimum.

POLITICAL ORGANIZATION

Chieftainship

Chieftainship among the Kickapoo was hereditary through the male line [13]. The position was inherited by the oldest son of the chief upon his death. If, however, the eldest son was still a child at the time of his father's death, a council of elders would appoint someone to replace the chief until such time as the chief's son became eligible for the position. Three informants said that the chief and his eldest son were always members of the Water Clan.

The chief had a number of male assistants who functioned as an advisory council. One man on this council, a member of the Turkey Clan, was considered the chief's first assistant. The chief's second assistant, if he had one, and the remaining members of the council could belong to any clan [14]. In theory, the chief had complete authority over his subjects, but, in practice, he was simply a leader or an administrator. All major decisions affecting the tribe were subject to public approval and ratification by his council.

Warrior Society

The Kickapoo had a warrior society composed of a number of men who had an outstanding record for bravery in war. The wetaøelk, "warriors who fought with honor," were generally middle-aged or older [15]. Since active warfare was no longer possible after the Kickapoo permanently settled in Oklahoma, the primary function of this society was to punish habitual criminals, e. g., men who committed crimes against the tribe such as murder, persistent thievery, or persistent adultery. Disciplinary action of this society was a rarity, however, for it generally meant death. As a rule, social deviants were kept in line by public opinion, familial advice, and public whippings. If, however, an idividual continued his criminal acts against the tribe after he had been encouraged to stop many times, the warrior society was asked to take charge of the situation. An informant explained this as follows:

> They [the warriors] will be told to deal with this man. Both sides of the family — especially his family will give

them consent to put him to death. They might kill him with a bow and arrow. I heard of one warrior that would beat them to death with a club. That was very rare because once they were turned over to these warriors, there was no reprieve. For that reason, it was very rare that anybody wouldn't listen to reason.

Village Crier

An elderly man was appointed by the chief to act as village crier. During the evening the crier would walk through the village and give a public verbal report of the happenings of the day and make announcements regarding forthcoming tribal activities.

Religion

Ritzenthaler and Peterson in discussing their work with the Mexican Kickapoo state that an informant "held out his hand and said that each aspect of Kickapoo life was like the fingers which are connected to the hand, implying that Kickapoo culture is so integrated and so concerned with the religious theme that it is impossible to separate facets of culture into strictly unrelated categories" (1956:46). This statement about the Mexican Kickapoo of today is applicable to the Oklahoma Kickapoo of the late 1800's. Religion was the principal force integrating all Kickapoo individuals. Kickapoo religion extended from the simple duties of a woman keeping her house and yard clean (every house was considered "holy") to highly structured ceremonies.

Supernaturals

The Kickapoo conceived of three types of supernatural forms: (1) deities, (2) spirits, and (3) witches. Through these supernaturals the Kickapoo could explain the relationship of individuals to the universe and account for and rationalize human experience.

Deities

The Kickapoo credited kižihiat, a supreme being that dwelled in the sky, with the creation of the universe. Kižihiat was not all powerful, however, for there were a number of lesser deities or "helpers" assisting him. According to an informant:

The Creator is the main god. His name is kižihat. That's the Creator and he's the one main god of all. He has

assistants though. There were several gods that the Creator appointed to do different things.

The Kickapoo applied the term manito[a] to any given deity and the term manitoaki to deities as a group. Kečimanito[a], "Big God", was a synonym for kižihiat. One informant stated:

> He's kečimanito the one that's most powerful. He's the head you know. Kečimanito[a] had a lot of helpers. Manitoaki means more than one — that's kečimanito[a] ['s] helpers. If you get sick you would ask the helper that controls sickness to help you. He would ask his father to help you.

Through these lesser deities, residing in the earth, the sky, trees, rocks, and other forms in the universe, kižihiat took a personal interest in all Kickapoo individuals. An informant explained this as follows:

> Those gods watched your conduct and reported to the creator. They always close to you; just like across to you. They are right here with you. They watch your conduct. Whether its the East God or the South God, they are watching you all of the time. The Daylight God controls the white of the eye and the dark part of the eye is controlled by the Night God. The thing of that is that they can watch your conduct both night and day.

Some of the more important lesser deities of the Kickapoo were as follows:

God of Fire (oškutenaeti). — The primary function of this deity was to act as an intermediary between kižihiat and the leaders of the bundle societies. During certain ceremonies, prayers were offered to oškutenaeti and he in turn would deliver them to kižihiat.

God of Thunder (panimatapeta). — The God of Thunder controlled bad weather. In time of expected storms a prayer and some sacred tobacco were offered to panimatapeta in hopes that he would cause the storm to subside.

God of War (meneøenoi). — Meneøenoi, a culture hero, was killed by his brother because he was in line for the position of chief. After his death, he was made a deity by kižihiat and was given control of all war. Furthermore, he was

placed in charge of the spirits of all dead warriors.

God of Water (nipinenya). — This deity had the responsibility of maintaining life on earth. Prayers of thanks were offered nepinenya during certain ceremonies.

God of Death (pepateha). — Following the death of an individual, his spirit would leave the body and come under the supervision of this deity.

Other deities. — Besides the deities already mentioned, informants agreed that there was a God of Darkness, a God of Light, a God of Wood, a God of Trees, a God of Disease, a God of North, a God of South, a God of East, and a God of West. Informants also agreed that there was a God of Evil (mʌčemanito). This deity was responsible for all of the evil in the world [17]. A major semi-deity was the God of Earth (oškikiøemakeøek, "earth area"). Although not actually considered a deity, she (only female deity) was credited with having the power to produce life and was consequently offered a prayer of thanks during certain ceremonies.

Spirits

The Kickapoo term for both shadow and soul was nokena. With the death of an individual this shadow-soul left the body. According to an informant, "When you living you see your shadow — you see yourself. When you gone, you loose your shadow." Informants were not clear as to where this shadow-soul went after death.

The Kickapoo term for ghost or spirit was čipaya. Following death, the ghost-spirit left the body and walked the earth and was often in the presence of relatives. During the winter the ghost-spirit slept, but during the late spring, summer, and early fall it was in need of nourishment so the Kickapoo held Ghost Feasts (čipakowepi) to appease the appetite of this supernatural. At this time the ghost-spirit would join his or her relatives and eat with them.

Since the Kickapoo applied the term nokena to both shadow and soul and the term čipaya to ghost or spirit, is is probable that they believed in soul-dualism [18], i. e., there was a shadow-soul and a ghost-spirit.

Following death the ghost-spirit of an individual would leave the body and was destined to walk about until such time as the earth was destroyed by fire. At this time the

ghost-spirit of those individuals who had not led the "good life" would be destroyed along with the earth. The spirits of those individuals who acted in accordance with social norms and had fulfilled the duties expected of them were spared. Following the destruction of the earth by fire, the "hereafter" land (located someplace in the sky of the west) would descend and take the place of the earth in the universe. Here, in a land of plenty, the "good" spirits would live through eternity. If while on earth, the individuals had not lived a "good" life but on the other hand, had not lived a "bad" life, his ghost-spirit might then be reincarnated into an animal form. An informant explained the acceptance or rejection of a spirit into the "hereafter land" as follows:

> They say that after this world burns; well that good land will come down here. The good land will come down here and they will put the good people here. If you only done half good things, then you be maybe some kind of bug or grasshopper. Maybe you be something. If you are clear of everything and done right all of the time, then you are accepted as people. When the world come down, there will be more sickness and you will live forever. If you were good and right then you will be accepted. If you were only half good then you might be a bug or a grasshopper or a bird or maybe an animal. If you were real bad and didn't do things right, then you would not be accepted — you just burn up.

There is no evidence to suggest that spirits could harm mortal beings or that the Kickapoo were extremely frightened of them. The Kickapoo did, however, respect spirits and, except during Ghost Feasts, preferred not to be bothered with them.

When an individual died weeds were burned around the deceased's house for four nights. This served to ceremonially cleanse the house and prevent the spirit from returning to its home. The personal belongings of the deceased were given away. It should be noted, however, that the burning of weeds and the giving away of personal property served only as a "cleaning away of death" and did not constitute an abnormal fear of spirits. The Kickapoo did not see spirits nor did they consider them anthropomorphic. They did, however, "feel" their presence.

Witches

The malevolent supernaturals among the Kickapoo were witches. All of the Kickapoo were terrified of witches and witchcraft served as a major means of social control. In general, middle aged to old people were suspected of being witches and to displease a person over forty was simply inviting trouble because no one knew when they were in the presence of a witch. Witches, both male and female, banded together and formed a secret society. Members of this group, the manaø^waj ti, had the power to transform themselves into animal forms or a ball of blue fire. The witches, in animal form, would walk about the village during the night and tend to their job of witching people. They had the power to kill or make an individual sick. To touch a witch meant certain death. The most common practice of a witch was to go into an individual's house during the night as a dog, bear, coyote, or owl and place some "bad medicine" in his food. When the individual ate this food he would either die or become very ill. His only chance for survival was to seek the aid and advice of a shaman. If the shaman was able to cure the witched person, he could then seek revenge for the pain he had suffered. If he chose revenge, he would ask the shaman to tell him who was responsible for his illness. Through fasting the shaman could determine who had witched the individual and inform him where the witch would be on a specific night and in what form he would be appearing. For example, the shaman might tell his patient that the witch would be on a certain path in three nights in the form of a bear. The man could then meet the witch (the bear) and hit it with a clod of dirt. Within four days the witch would die.

Religious Practitioners

It has already been noted that the Kickapoo had four bundle societies or "religions." Each of the societies was headed by an accepted leader who generally had an assistant. Although these leaders were attributed with having more than a normal amount of supernatural power, in general, they did not function as medical practitioners. Their primary function was directing religious ceremonies. For this reason, they were believed to be sacerdotal and should not be confused with Kickapoo shamans who, though they had super-

natural powers, were medical practitioners rather than religious practitioners.

The four priestly leaders were always old men and succession to the position, although not strictly hereditary, often took this form. To become a bundle society leader required many years of apprenticeship for it necessitated the learning of numerous prayers, songs, and ritualistic procedures. To gain the "wisdom" required to function in this position, a neophyte had to frequently fast and take ceremonial baths. To maintain this "wisdom" also required fasting and ceremonial bathing. No ceremony accompanied the acquisition of the position of bundle society leader for as a leader grew old, a neophyte would assume his responsibilities and the old man would act as advisor.

These leaders, although endowed with supernatural powers, lived a normal Kickapoo life, i. e., they married and had children. They were, of course, highly respected by all members of the tribe. There is no evidence suggesting that they were witches, homosexuals, or transvestites.

Sacred Bundles

Each of the four bundle societies had a sacred bundle. It was the responsibility of each bundle society leader to care for and keep the bundle of his society. It was believed by the Kickapoo that these bundles were given to them by supernatural powers and that it was the responsibility of the bundle society leaders and the tribe to pass the bundles, along with the four "religions' to each descending generation.

Each bundle was made of a rectangular piece of buckskin that was rolled into the shape of a cylinder. When in cylinder form, the bundles were about two and one-half feet long and about one foot in diameter. Strands of buckskin were tied around both ends and in the middle of these cylinders to keep their contents intact [19]. Although information as to the contents of these bags was difficult to obtain, informants stated that each bag contained a stone pipe, two or four gourd rattles, a bone or hollow reed flute and a small bag of "sacred tobacco". With each bundle, there were some drum sticks and a small brass kettle which when covered with buckskin and partially filled with water served as a drum.

Each bundle society leader kept the bundle in his care

hanging inside his house about eight feet high on the west wall. This wall was always reinforced to protect the bundle from the weather. When the bundle society leader was to officiate at a particular ceremony, he would take the bag from the wall and strap it across his back with some strands of buckskin. Women, during periods of menstruation were never allowed near the bundle.

Although all of the items in the bundle were considered sacred, the small pouch of tobacco was believed to be the most holy. This tobacco was considered to be supernaturally endowed and was used as an offering to deities. The tobacco was grown by the bundle society leaders and following harvesting a small portion of the tobacco was distributed to each Kickapoo household. Once the tobacco was distributed, it was hung inside the house on the west wall. Women were never allowed to go near the fields where the tobacco was being grown.

Ceremonial Foods

During Kickapoo ceremonies, practically all food available to them was eaten. Any kind of food eaten during a ceremony, whether is was turkey, rabbit, duck, corn, squash, or pumpkin, was considered holy. The two foods held in highest veneration, however, were the deer and the young dog.

The most prized wild animal utilized by the Kickapoo was the deer and, under normal circumstances, all edible parts of the animal were consumed. During certain ceremonies, however, only the ribs of the deer were eaten. The ribs were cooked in a kettle that hung from a chain inside the house since the Kickapoo believed the ribs to be a preferred food of spirits and deities.

The use of a puppy in a Kickapoo ceremony followed a set procedure. About three months before the ceremony was to be held, a first-born puppy was selected and given special attention. It was considered sacred, kept in the house, and fed only what the people themselves ate. It was never fed scraps. The following statement of one informant explains why the Kickapoo considered the puppy holy.

> They eat small puppies in these ceremonies. That's in one of those prophecies. Who ever instructed them on this religious ceremony said that they would sooner or

later loose all wild game. They told them that there would be a day when all wild game would be gone. They told them that they should use a small dog — a puppy. Use a puppy instead of a bear or a deer. The dog and the puppy will be with them until the end of time. It will be with them until the end of the world.

Just before the ceremony, the puppy was taken away from the village and killed by breaking its neck with a pole. The hair was then singed off the animal and it was cleaned and dressed. It was then cooked in a kettle.

Ceremonies

The integration of Kickapoo culture was dependant upon a number of highly structured religious ceremonies. Due to a lapse of memory on the part of informants and the passage of time since the Kickapoo first arrived in Oklahoma, it is impossible to reconstruct all Kickapoo ceremonies. The following ceremonies, however, will serve to illustrate their scope and nature.

Spring Feasts

Following the second thunder of each year (sometime during March), the Kickapoo held their Spring Feasts (apakenik&i k). A single individual, represting a clan, would supply the food (with help from relatives) for a Spring Feast. The leader of the bundle society to which this individual belonged would be requested to officiate at the feast. The cooking, preparing, and serving of the food would be done by members of a clan other than that of the sponsor. To illustrate if the sponsor of the feast was a member of the Eagle Clan and a member of the pačakwia bundle society, the leader of the pačakwia society would officiate at the feast and men from the Tree Clan would prepare and serve the food. All member of the tribe were allowed to attend the feast. During the feast, the leader of the pacakwia society would open the pačakwia bundle. The other bundle society leaders did not bring their bundles, although they did function during the ceremony as song leaders. Each bundle society had songs that could be sung only by its members. These feasts were held at four day intervals and required enough time for all of the clans to officially participate in a feast and for the four bundles to be opened.

These feasts marked the beginning of a new year; cattail houses were dismantled and bark houses were constructed; a new sacred fire was kindled (a sacred fire was kept burning through the year); and the sacred bundles were refurbished. The feasts also marked the beginning of a new ceremonial season, and following the feasts, people in mourning could remarry.

Prior to the Spring Feasts, deer ribs would be stored and small puppies would be fattened; old agricultural and hunting implements would be repaired and new ones would be made; and the finest of clothing would be prepared for the coming season. The feasts were accompanied by religious dances, games, prayers, and sermons. All activities connected with the Spring Feasts were held to insure a bountiful forthcoming new year.

Adoption

Kickapoo adoption ceremonies were held during the summer months following the Spring Feasts. The term "adoption" is actually incorrect for the ceremony constituted ceremonial replacement, since following the death of an individual another member of the tribe ceremonially replaced the deceased. Until this adoption ceremony took place, the spirit of the dead person would remain close to its relatives, which was considered undesirable by the Kickapoo. Following adoption, the spirit would travel to the west and return only for the Ghost Feasts. The relatives of the deceased individual had up to four years to fulfill their obligation in regard to this replacement. If they did not do so within this period of time, ill luck would befall the family. All Kickapoo who had received a name and then died were ceremonially replaced.

Adult male.— If a man died, sometime during the following summer one of his immediate consanguine relatives would assemble the family for the purpose of planning an adoption. At this time, a date was set for the ceremony and, as a general rule, it was decided that a moccasion game would be played at the ceremony [20].

During the early morning hours of the day of the ceremony, the man selected to replace the deceased individual would be notified of the ceremony. The adoptee was always

a member of the same clan, bundle society, and moiety of the deceased. At the same time that the adoptee was notified of the ceremony, he was also given eight or ten undecorated sticks about six inches long and was told that the moccasin game was to be played and that he was expected to be leader of one team of moccasin game players. At this same hour in the morning, the leader of the bundle society to which the deceased belonged was asked to officiate at the ceremony and act as referee for the moccasin game. Members of a clan other than that of the deceased man would be asked to prepare and serve the food at the ceremony. A man of a different clan, bundle society, and moiety than that of the deceased man would be informed that he was to be the leader of another group of moccasin game players. This second moccasin game team leader would also be given the same number of sticks that were given to the adoptee.

Once the adoptee and the leader of the other team of game players were notified, it was their responsibility to select the members of their respective teams. The members of each team would belong to the same moiety as did the leader. Each team player was given a stick by his team leader and it served as his invitation to attend the ceremony.

About four o'clock in the afternoon, the male members of the clan asked to do the cooking would gather at the house of the sponsor of the ceremony and begin to prepare the food. Inside the house, a fire was started with a flint and the men would begin cooking the food in pots and kettles that hung from a beam. The food prepared consisted of whatever the deceased person, while a mortal, liked. The meal generally included meat, corn, and pumpkin. If, however, the deceased like watermelon and coffee, they would also be served.

Following the arrival of the clan that was responsible for the cooking, the relatives[21] of the deceased, the players of the moccasin game, and the bundle society leader would arrive at the house. These individuals would assemble outside the house and enter it in single file, turning left and walking along the south wall until all those invited to the ceremony had entered. The bundle society leader would sit near the center of the west wall scaffold. The relatives of the deceased

would also sit on the west wall scaffold. The moccasin players sat on the south and north wall scaffolds according to their moiety, i. e., kisoa to the north and oskas to the south.

Prior to the serving of the food, the man officiating at the ceremony would offer a prayer in explanation of why the ceremony was being held. He would inform the spirit of the deceased that his relatives and friends had gathered to eat with him and that the following morning he would be sent to the west. At this time, food was placed on the fire as an offering to the spirit. Following this feeding, the individuals invited to the adoption would be served. After the people had eaten, there was a moment of silence and food was again offered to the spirit. A prayer of explanation and thanks was offered and the people would leave the house. By this time, other members of the tribe had arrived and they were invited inside the house to partake of what food was left.

By dark, the men to participate in the moccasin game were seated on benches (kiskoa to the north and oskas to the south) located to the east of the house. Beyond the players to the east was a rack (like a rug frame) covered with blankets, shirts, moccasins, dry goods, belts, and other material goods. These goods were placed on the rack by the relatives of the deceased and constituted prizes for the players in the moccasin game.

The moccasin game was played with four moccasins and a small bell. The adoptee would start the game by hiding the bell in one of the moccasins. This was done behind a large piece of buckskin held by the man sitting next to him, so that the opposite team could not see in which moccasin the bell was hidden. The adoptee would then place the four moccasins in a row on the ground and the leader of the other team would then flip over the moccasin in which he thought the bell was hidden. If the bell was found in the first try, his side would win four points; if he did not find it, his side would lose four points. If he did not locate the bell on the second try, he would lose another four points and this procedure continued until the bell was found. The moccasins and the bell were turned over to the other team and the same procedure was followed. Each man on each team took his turn at hiding and finding the bell. The game was accom-

panied by singing and drumming and continued until daybreak. Theoretically, either team could win the game. Informants, however, suggested that the adoptee's team always won.

When the game was called to a halt, the bundle society leader would return to the house and pray. He would take some of the sacred tobacco, place in in the fire, and inform the God of Fire that it was time for the spirit to leave his relatives. He would then return outside and give a public prayer. According to an informant, he would say, "Now we are sending you the spirit of this dead man. He has lived here with us and now we are instructing him to leave us and asking you to accept him."

Following the closing prayer, the adoptee would go to the rack of clothing and select the best item or items for himself. He would then distribute the remaining items among all players in the moccassin game. With the close of the ceremony, the adoptee, although he did not change his residence, assumed the familial obligations of the man replaced.

Male youth. — If a boy between the age of naming (about three months) and the age of puberty (about fourteen years) died or was killed, he was also ceremonially replaced. A bow and arrow contest was generally held at this adoption ceremony.

During the day of the ceremony, the same procedure was followed as was the custom in an adult male adoption, i. e., an individual from each moiety was selected to head the game team; members of a different clan from that of the boy were asked to do the cooking; and the bundle society leader of the deceased was asked to officiate. In the case of the bow and arrow contest, there were four boys on each side, all of whom were about the same age as the deceased. At the male youth ceremony, the feast marked the end of the ceremony until the following morning when the eight boys returned to have the bow and arrow contest.

When the boys arrived the following morning, they would have with them bows and arrows that were especially made the previous day for this contest. The oskas boy's arrows would have black stripes painted on them and the Kiskoa boy's arrows would have white stripes painted on them. Two

stakes were driven in the ground about fifty feet apart which extended upward about four or five inches. The eight boys, four on each team, would take turns shooting at the stakes. The team with the most points won the contest. Presents were given the boys that participated in the contest and the leader of the team that won was considered the adoptee [22]. At this time, he would assume his new obligations and the game was over.

Adult female. — The adoption ceremony for an adult female was generally accompanied by a dance that lasted for a full night. As was the case with other adoption ceremonies, the arrangements for the feast and the adoption were handled by the relatives of the deceased and those people expected to participate in the ceremony were notified in the morning on the day of the adoption. The adoptee (a female) was the first to be notified. She was given ten or twelve sticks and requested to choose the women she wanted to assist her in the dance. The adoptee was considered the head dancer and those women to whom she gave sticks were considered her "court". As in the other adoption ceremonies, the leader of the bundle society to which the deceased belonged was asked to officiate at the ceremony and men from a clan other than the one of the deceased were asked to prepare the food.

The feast that took place in the evening before the dance was exactly like the one held in connection with an adult male adoption, i. e., the relatives of the deceased sat on the west scaffold, the dancers (all women) sat on the north and south scaffolds, food was placed in the fire for the spirit, and prayers were offered to deities. After those people who were invited to the ceremony had eaten, they went outside and the other members of the tribe would eat.

By dark, the people who were to participate in the dance had taken their places outside the house (Figure 5). Just inside the porch or shed section of the house, facing east sat the bundle society leader officiating at the ceremony. To his right there were two honored singers and to his left there were two honored singers. These four singers represented different clans and were selected to lead the singing because of their knowledge of the songs of their particular clan. About twenty-five feet east of the house was a frame-like

rug rack with kettles hanging from it where food was being cooked. About twenty-five feet beyound the cooking rack there was another frame-like rug rack with blankets, dresses, belts, and other material goods draped over it. The dancers were sitting on benches north of the cooking rack.

Following a prayer by the bundle society leader, three men would join the honored singers sitting farthest to the south. The four men, all members of the same clan would have a silent prayer. They would then rise and two of the men would face north and two of the men would face south. One of the men facing south would place a kettle drum against his stomach and with straps extending around his neck, secure it to his body. This man was known as the drum carrier. Next to this man, also facing south, stood a singer. Opposite the man who carried the drum, facing north, stood the honored singer. It was his job to beat the drum and act as head singer. To the head singer's left, facing north, stood a man with a black gourd rattle. He was known as the gourd shaker.

As the drumming and singing started, the adoptee would leave her seat and begin dancing clockwise around the two racks that had been constructed. After she had completed one circle, her court would begin to file in behind her. At

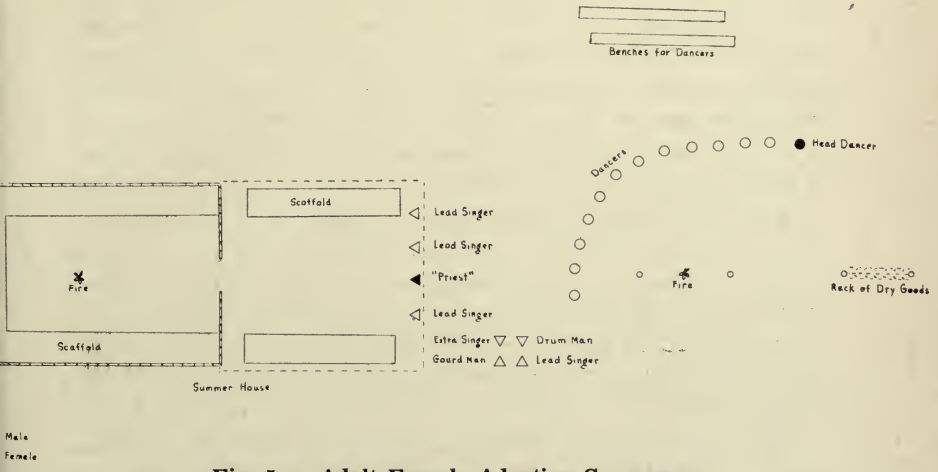

Fig. 5 — Adult Female Adoption Ceremony.

this same time, the four singers would begin to move slowly in a clockwise manner with two of the men walking backwards. "The dance pattern was simple. Beginning at the west, directly in front of the arbour, the singers encircled the entire cleared space, pausing at each of the cardinal directions to sing. The dancers formed a line inside the circuit made by the singers, circling closely about the fire [and the rack containing material goods]. The step never varied; the knees were bent, and a short hopping step forward taken, the body swinging from side to side. The arms swung loosely from the shoulders, but they and the entire body were constantly in motion" (Marriott, 1937). This continued until each song had been sung four times and the singers had made four circuits around the dancers. At this time, the dancing and singing stopped and there was about a thirty minute intermission.

Following the break, the same procedure was repeated with a new set of singers from another clan. The dancing and singing continued until daybreak with each honored singer taking his turn at leading the singing. At daybreak, as in the adult male adoption ceremony, the spirit was advised to travel to the west and the ceremony came to a close. The head dancer, the adoptee, selected from the rack of material goods what she wanted; the remaining items were distributed to the other dancers.

Female youth. — The adoption of a female youth took place during the early morning hours as did the adoption of a male youth only instead of having a bow and arrow contest, a dice game was held. The preliminaries to the game were much like those to a boy's bow and arrow contest, i. e., two teams of players were notified, a bundle society leader was asked to officiate at the ceremony, members of a clan unlike that of the deceased prepared the food, and there was a feast in the evening. As was the case with the bow and arrow contest and the moccasin game, participants in the dice game were divided by moiety. Following the evening feast, everyone went home and returned the following morning for the dice game.

The game was played with nine bone dice and a wooden bowl. Each dice was an elliptical disk. On one side of two

of the dice, the image of a turtle was carved. One side of each die was colored either black or blue and the other side was left plain. The disks with the carved turtle images had the reverse side colored black or blue. The teams took turns flipping the dice in the bowl and the score depended upon combinations of colored, plain, and turtle dice, e. g., the highest score possible was attained when all the die were a similar color and the two turtles were upright. The adoptee's team won the game and all of the players were rewarded with gifts. As in all adoptions, the adoptee assumed the familial obligations of the deceased but did not change her residence.

Ghost Feasts

It has already been noted that the ghost-spirits of the Kickapoo slept during the winter but because of a need for nourishment, returned to the village during the summer. To appease the appetite of these spirits, Ghost Feasts were held. These feasts were family affairs and, in general, a large number of individuals did not attend a single feast. It was the responsibility of each family to hold enough Ghosts Feasts to appease all of its deceased relatives. Consequently, each family held several of these feasts during the Spring, Summer, and Fall. The maximum number of spirits that could be honored at a single feast was two. These feasts followed the same procedure as did other Kickapoo feasts, i. e., a single individual sponsored a feast, a clan other than that of the deceased prepared the food, a bundle society leader officiated, prayers were offered to different deities, and food was placed in the fire for the spirit. The feasts for honored warriors were held in the early afternoon and feasts for "normal" individuals were held in the late afternoon. There were no dances or games held in conjunction with Ghosts Feasts.

Dances

Two of the more important dances held by the Kickapoo were the Rain Dance and the Green Corn Dance [23]. The Rain Dance was held during the Spring Feasts and lasted one or two days and nights. Both men and women participated in the dance although the cooking for the feast held in connection with it was done by men. The purpose of the

dance was to produce rain and, thus, afford an abundant crop of corn.

The Green Corn Dance was held during late July or early August when the corn ripened. A feast accompanied this dance and it lasted for one day and one night. Both men and women participated in the dance although the cooking was done by the women. The dance was held by the Kickapoo to show their appreciation for the corn and, until the dance was held, new corn was not eaten.

Wapanowa

Among the Kickapoo, certain individuals were endowed with more than a normal amount of supernatural power. An individual of this type, during certain ceremonies, was known as wapanowa. Only men of certain clans (informants did not know which groups) had the power to become a wapanowa. Although informants could not translate the term into English, it propably meant "scorcerer or wizard" for this was the case with the Cree, Ojibwa and Menomini [24]. Informants did not know whether these men also functioned as bundle society leaders or medicine men.

According to two informants, a wapanowa would assemble a number of individuals (one woman and six men) during a time of sickness or witchcraft for the purpose of holding a feast and a dance. Only the wapanowa and his assistants (wapanowaki) participated in the feast and the dance although all members of the tribe could attend. The dance took place during the day and was followed in the evening by the feast. Toward the end of the day, a large kettle was placed over a fire and the head of a deer (including antlers) was placed in it to boil. After the deer head had been allowed to boil for some time, the wapanowa, followed by the woman and his six male helpers, would face east and stand in front of the kettle. The wapanowa would then place his hands in the boiling water, take the deer head out, take a bite of it, hold it in the air to the east, and say a prayer. This was done four times, for the head was extended toward all four of the cardinal directions. After the wapanowa had finished, the head of the deer would then be passed to the woman behind him. She would take a bite of the head and then pass it to the man behind her who would follow the

same procedure. This continued until all of the wapanowaki had partaken of the deer. Following the eating the the deer, there was a feast and the ceremony ended.

Shamanism

The Kickapoo concept of sickness hinged upon the idea that poor health (other than old age) was caused by a foreign object entering the body, e. g., a spider bite (poison), an arrow, or "bad medicine," generally from witches. Broken limbs were generally considered the result of an accident and no supernatural meaning was attributed to them. Because of this concept, it was the duty of medical practitioners (shamans) to relieve the effect by removing the cause. Even though the Sac and Fox agency physician made 103 calls on the Kickapoo during 1874 and 1875 to attend to such ailments as sore eyes, bad coughs, diarrhea, and chills (OHS 1875), they primarily utilized the services of their own shamans.

Among the Kickapoo there were both male and female shamans and, for the most part, women used the services of the female shamans and men used the services of the male shamans. The exception to this rule was in the case of witchcraft. Only male shamans were vested with enough supernatural power to combat such an evil force [25]. A young man or woman could become a shaman only after he or she had served a long apprenticeship. Prior to the apprenticeship, a young man or woman had to convince a practicing shaman of their sex that they were suited for the job and were ready to accept the responsibility that accompanied it. If they were accepted as novices, they would spend years learning how to prepare different medicines from herbs and how to administer them. They were also instructed in the supernatural aspects of their shamanistic duties which for the men included fasting and ceremonial bathing. The novice assumed the job of shaman when the old practitioner retired.

Kickapoo medical practitioners lived "normal" lives, i. e., they could marry, were not homosexuals, and functioned normally in the society. The leading male shaman of the society generally lived at the southeast corner of the village. In time of an epidemic an isolation house was constructed southeast of his house. Here, the shaman could care for his

patients without endangering the other members of the tribe [26]. Each time the shaman visited a patient in the isolation house and returned to the village, he would change his clothes and take a bath. Female shamans lived in no designated area within the village.

Everyday illnesses such as minor stomach aches, head aches, etc. were generally not considered serious enough to be treated by a shaman. If, however, the illness persisted, a shaman would be consulted and he or she would generally prescribe an herb medicant to be applied or taken orally. If the patient did not recover in due time, a sweat bath might be prescribed. If this did not cure the illness, there would be no doubt in the minds of the Kickapoo that the person had been bewitched.

"Sucking," accompanied by supernatural intervention was the most common medicant used for curing a person who had been bewitched. Through fasting the shaman would receive a vision explaining how and when his patient had been bewitched and what procedure should be followed to relieve his suffering. Although "sucking" could be done on patients that were not bewitched, it was frequently done on those who were. One informant commented on this medical procedure as follows:

> Sometimes they cut them to get things out. I still got a little horn — the one that the old people gave me. Sometimes there is witchcraft and they put something in you. This woman over there came to me cause someone put something in her head. I tied her hair up and I sucked it out for her. I cut her. It's hard to believe that I fixed her but I put a little medicine in my mouth and I put it on her head where she was sick. I put this little horn where I cut her and got it out.

If the shaman was able to cure the bewitched person, he would inform his patient of the procedure he should follow if he wanted to seek revenge for his sufferings.

Shamans were always paid for their services, the amount depending upon the seriousness of the illness. If a man was cured of witchcraft, he would gladly present the shaman with two or three horses. If the patient died, the relatives of the deceased had no recourse, for this was an element of nature that could not be controlled by a mortal.

THE LIFE CYCLE

Birth

At the onset of labor a woman would retire to one of the menstrual huts located to the west of the village and prepare to have her baby. Inside the hut there was a small fire to keep her warm and a pole for her to hold if the pain became too severe. Just before the baby emerged, the woman would kneel, spread her legs apart, and one or two mid-wives would apply pressure to the abdomen of the mother-to-be in an attempt to insure a quick delivery. The child was caught on a clean piece of cloth. The umbilical cord was cut a finger's length from the child and then tied with sinew. The child would then be bathed in water containing special herbs. The after-birth was tied in grass and placed in a tree to rot. The mother was cleansed, bound around the abdomen with a soft deer skin, and given a herb tea to drink. If the child was a boy, the mother stayed in the menstrual hut for forty days and nights; if a girl, for thirty days and nights. The mother kept count of the days by notching a stick. While the woman remained in the hut she was not allowed to eat salt, drink cold water, or go near the village. During this time the child could be taken from the hut to the village for its father and relatives to see, but it would always be returned for nursing except when a wet nurse was needed. If a wet nurse was required, she was a relative of the mother. A mother usually nursed her child about nine or ten months.

After the mother had remained in seclusion for the correct number of days, she would go to the river or creek early in the morning and bath and change her clothes. She then returned to the village and assumed her responsibilities as a wife and mother.

Following birth, the child was wrapped in cloth and placed on a cradle board. This board was about two feet long, eight to ten inches wide, and had a hoop at the top to protect the infant's head. There was no foot rest for the infant. The only thing that kept the child from slipping from the cradle board was a thong of bucksin tied around the cradle. It was believed that unless the child was placed on this cradle-board, its head would be pointed in the back rather than flat which was considered more desirable.

The cradle board was made by a near relative of the child (usually father or uncle) and the wood from which it was made was always taken from the east side of a cottonwood tree. While making the cradle the carpenter would say a prayer to the God of Wood and the God of Disease requesting that the child be protected from illness and allowed to live a long life. The prayer always commenced with some of the sacred tobacco being offered to the deities.

Sometime between birth and two months the new-born child was made its first pair of moccasins. Each moccasin had a small hole in each sole. These holes were placed in the moccasins so that the child could refuse to accompany a spirit on a long journey. If the child did go with the spirit, it would surely die. As one informant put it, "If he has holes in his shoes, he can't travel."

A new-born child was kept in the cradle board for about six months or until which it learned to crawl. Prior to this time, however, it was frequently taken from the cradle and tied in a hammock. This hammock was made from a blanket or buckskin and tied inside the house or between two trees outside the house.

Naming

A child could be given a name anytime during its first three months, although, as a rule, it did not receive its name until the three month period had elapsed. At this time, the parents of the child would decide who would give it a name. Generally, the father named the first-born, the mother the second-born and all succeeding children were named by relatives. This procedure, however, was not mandatory and any member of the tribe could theoretically name a child, whether first-born of fifth-born. If a person other than one of the parents named the child, a close relationship developed between the two individuals and presents were often exchanged throughout life.

As previously noted, names were always derived from the clan plant or animal of the namer's clan. For example, if the namer was a member of the Eagle Clan, he might name the namee, oniøea, "to fly." Furthermore, the name selected to be given to a child had previously been the name of another individual. To illustrate, informant J. G.'s name was

papežekita, "getting ready to bloom" (Blackberry Clan), This name, papežekita, belonged to another individual that had died prior to the naming of J. G. Following the death of the previous papežekita and prior to the naming of J. G., speaking this name was taboo for all Kickapoo. Name taboos were in effect only when the name was not in use as a personal name.

Kickapoo naming ceremonies were well organized and all people invited were expected to participate.

If the sponsor (namer) of the ceremony was a member of the Water Clan, he would ask his bundle society leader to officiate at the ceremony and member of the Eagle Clan to prepare the food. He would also ask the immediate consanguine relatives of the child and the accepted leaders of the Blackberry, Bear, Wolf, Turkey, and Water Clans to be present. After everyone had arrived at the home of the sponsor and the feast had been prepared, they would all go inside the house. Members of the Water Clan, immediate consanguine relatives of the child, and the bundle society leader would be seated on the west scaffold. Members of the Bear and Wolf Clans sat on the north scaffold and member of the Blackberry and Turkey Clans sat on the south scaffold. The members of the Eagle Clan did not participate in the ceremony other than in preparing and serving the food. The bundle society leader would place his bundle on the west scaffold (near the center), open it, and ask the namer to come forward with the child. He would then ask the namer what name [27] he had chosen for the child. The namer might tell him bikiøanokwa, "muddy water." The bundle society leader would then announce the name to all present. According to an informant, he would then take four pinches of the sacred tobacco, place it in the fire, and pray as follows to the God of Fire.

> Since you are a subordinate of the Creator of all things, we ask you to inform the Creator that he has seen fit to create a new life into his world. We have come to a point that we must pick a name for him and adopt him into a particular clan.

This prayer would then be followed by a prayer to the God of Disease requesting that the child remain healthy

throughout a very long and happy life. The man officiating would then take the child in his arms and announce that it was named. Following this, each individual in the house held the child and gave it advice. It was believed that the child would understand what was being said and abide by the advice received throughout its life. The ceremony ended with a feast.

Puberty

Prior to puberty, adolescent boys were schooled by their fathers, uncles, and older brothers in the art of hunting, making provisions for a family, and fulfilling their social obligations. Adolescent girls were instructed by their female relatives on how to keep a "good home" and fulfill their social obligations. Although the Kickapoo did not have a formal puberty ceremony for males and females, a ceremony (much like the naming ceremony) could be held in connection with this event if the parents desired. Frequently males went through a ceremony of this nature. Following puberty, both Kickapoo males and females were ready to assume the cultural status of adult.

A girl completed puberty after she had passed her first menstrual period. At this time, a new menstrual hut would be constructed for her to the west of the village. She would retire to the hut and spend ten days. During her stay in the hut, she was considered taboo to all male members of the tribe. She cooked her own food, ate out of her own bowl, and never went near the village. At this time she was frequently visited by her mother and aunts and told the "facts of life." After she had stayed in the hut the prescribed length of time, she ceremonially cleansed herself by going to the creek during the early morning of the eleventh day for a bath and a change of clothes. After she returned to the village, she was considered an adult and could be married, although this generally did not occur until she had reached the age of fourteen or fifteen.

Throughout a female's life, during a period of menstruation, she would observe the same procedure as she did during her first menstrual period only she made use of the same menstruation hut repeatedly and her period of seclusion only lasted five days. She was always considered taboo during

menstruation and she always bathed during the early morning following the period.

A male adolescent was not considered an adult until he had been on several hunts and was well versed in religious knowledge. A boy was generally fourteen or fifteen years old before he passed puberty. Learning to hunt took place over long periods of time. Acquiring religious knowledge, although he had learned a great deal from the stories of the old people, came about through formal religious instruction and fasting. When a boy and his family felt that he had the necessary skills to function as an adult, the boy would be placed in the custody of a member of the tribe who would act as the boy's religious instructor. This man was generally a bundle society leader. The boy would fast for four days and night and take a bath early every morning. Following the fourth day, a feast would be given in honor of the new adult. Although he was theoretically considered an adult and could take a wife after the feast, several years generally elapsed before he married.

Courtship and Marriage

Courting among the Kickapoo was accomplished with the use of a courtship flute (a hollow reed with finger holes). Most of the young men in the village had their own courtship flute, each with a distinctive sound. All of the females in the village eligible for marriage knew the sounds of these flutes and to whom the flutes belonged. During the late evening, a young man would go to the periphery of the village and play for a female acquaintance to come and join him. According to one informant:

> That was love music to them. The boys would go away from the village to play them. The women, especially the single women, all knew who owned these things. They could tell who was playing this flute by the way that it sounded.

As courtship between two individuals became more serious and marriage was imminent, the young man would inform his girl that he would like to come to her father's lodge some night and formally court her. If she agreed, he would slip into her house about midnight, spend the night with her and leave just about daybreak. This continued for several

nights and, theoretically, the young woman was to remain chaste, for premarital sexual intercourse was not socially sanctioned.

If the couple found that they were compatible, their respective parents would be informed that they were to become man and wife. The young man would continue going to her lodge at night, thus marking the beginning of their marriage. According to Jones (1913:232-233),

> The next stage in the ceremony is a visit to the bride by a woman who stands in relation to the husband as a sister's daughter. She might be called his niece in English; she certainly would be if she was the daughter of a sister. She takes to the bride a horse and all kinds of presents. The horse can be given to an older or to a younger brother, and the presents must go to relatives who are to her as mother's brothers and sister's sons. The bride then gives presents to the woman who has brought presents from the husband.

For a short while, following the marriage, the couple could reside either with the husband's or the wife's parents. In general, however, the wife would immediately go about constructing a house for herself and her husband.

Polygyny was sanctioned but was not generally the rule, for only a man of wealth could afford to have more than one wife. Informants agreed that the last Kickapoo plural marriage ended with the death of a man who had four wives sometime about the start of the twentieth century.

Marriage between parents and children, siblings, and cross and parallel cousins was prohibited among the Kickapoo. Even the oldest of informants could not recall moiety, bundle society, or clan ever regulating marriage, i. e., a man could marry a woman from his same clan, bundle society, and moiety.

The Kickapoo practiced both the levirate and sororate.

Divorce

The principal causes for divorce among the Kickapoo were adultery, negligence, and incompatibility. Divorce was easily obtainable and required only the husband leaving the house. The children generally remained with their mother.

If a person was suspected of adultery, the relatives of the two principal people involved would attempt to sever the

adulterous relationship. If the relationship persisted, divorce was the consequence. In general, both males and females were given several chances by society to remain faithful to their respective spouses.

Negligence on the part of either the husband or the wife, i. e., the husband failing to supply his family with adequate food or the wife failing to fulfill her domestic duties, was also ample grounds for divorce.

The third primary cause of divorce, incompatability, was explained by an informant as follows:

> If a married woman and man don't get along, usually both sides of the family told them if they had separated and can't get along, you should break peacefully. You are not to get violent with her and you are not to do no bodily harm to her. You will not find any woman that will be different from her. The man is told that if he can find a more helpful mate that will help him and his folks, then he should go ahead and court her. The woman is told the same thing. They just peacefully quit living together.

Death

With the death of an individual, the immediate consanguine relatives of the deceased would dispatch a ceremonial runner (member of the deceased's clan) to notify the tribe that a funeral was to take place. If the individual died during the late night or the morning, he would be buried the same day. If, however, death occurred after the noon hour, the burial would take place the following day. For illustrative purposes, let it be assumed that death occurred sometime in the afternoon. The deceased, a man, would be placed inside his house near the south wall, and his wife would retire to the home of a sibling, cousin, or sibling-in-law of the same sex. The bundle society leader of the deceased would be asked to officiate at the burial ceremony and male members of a clan other than that of the deceased (considered "working" clan) would be asked to do all of the physical work connected with the ceremony, e. g., prepare food. make a coffin, dig the grave, and prepare the body for burial. It was the responsibility of the deceased's clan to see that all duties connected with the funeral[28] were completed.

Following dark, the bundle society leader, the relatives of

the deceased (except spouse), and representatives of all the clans would assemble in the home where the body lay in state and hold an all night wake. Throughout the night songs were sung, prayers said, and the bundle society leader would recount the honored deeds of the deceased. During the night, different members of the tribe visited the body and paid their last respects.

During the afternoon preceding the wake, members of the working clan would make a coffin [29]. A dead tree was cut down, split lengthwise down the middle, and hollowed out. The results of this work was a two piece cylinder. A hole was always left in the coffin allowing the spirit of the deceased to leave the body. The coffin was then taken to the burial grounds, located west of the village, where it would remain, without the body, until the following morning. Just prior to and during the wake, the "workers" would wash the body, dress it in its finest clothing, and mark its face with black or red pigment. Some of the sacred tobacco was placed in the left hand of the deceased, the body was wrapped in a blanket, and then tied horizontally between two poles. These poles, extending along the sides of the body, were used as a means of carrying the body to the cemetery.

The following morning about daybreak, some of the "workers" would prepare food that was to be placed in the grave with the body while others would dig a grave about four feet deep, west of the village. Once the grave was completed, a messenger was sent back to the village to inform all those concerned that they were ready for the body.

A portion of the west wall of the house would be torn down and the body would then be removed through this opening. Four or six pall bearers (different clans) would carry the body. The procession to the burial area would be led by the bundle society leader, followed by other male members of the tribe. Members of the clan of the deceased and women did not accompany the body to the cemetery.

After all had arrived at the grave site, the body was placed in the coffin. The bundle society leader would take a ladle full of food and place it on top of the body. He would then offer some of the sacred tobacco to different deities, pray, and recount the deeds of the deceased. With this, the body

was lowered into the ground, and all except the "workers," whose responsibility it was to cover the grave, left the area. Except for the relatives of the deceased, members of the clan to which the deceased had belonged, and onlookers, all those who had participated in the ceremony were then rewarded for their services with presents which consisted of all of the clothing and personal belongings of the deceased.

All Kickapoo were given a formal burial with two exceptions; unnamed infants and people who had committed suicide. Infants who had not received a name had no spirit and were simply placed in a hollow tree or stump. People who had committed suicide did not deserve a funeral and were quickly placed in a shallow grave.

Mourning

As soon as an individual learned that his (or her) spouse had died, he would immediately seek refuge in the home of a sibling, cousin, or sibling-in-law of the same sex. A man or woman would take no part in his or her spouse's funeral. Four days after the burial, the mourner would go to a creek, take a bath, change clothes, and then return to his home. By this time, the house had been repaired and ceremonially cleansed. A person would remain in mourning until a feast was held in his honor. During this period of mourning, generally a year to a year and a half, the bereaved would wear old clothes and, in general, remain in seclusion. Following the feast, held in connection with the Spring Feasts, the person would put on his finest clothing, consider a remarriage, and prepare for a new life.

POSTSCRIPT [30]

As noted earlier, with the dissolvement of the Kickapoo reservation in 1894, the Kickapoo tribe split into two major political factions, the "Progressives" and the "Kickers" (ARCIA 1898:251). The acceptance of the allotment of lands by the "Progressives" marked the first major success for the U. S. in their attempt to break up the Kickapoo village "way of life." The "Kickers" believed that the Great Spirit would be displeased if they consented to allow the land to be divided and, according to Elizabeth Test, Kickapoo Field Matron, rather than allow this to happen, they chose to "suf-

fer a great deal" (ARCIA 1894:257). In the words of Martin Bentley, Special Indian Agent for the "Kickers," while testifying before a subcommittee on Indian Affairs, "they kicked at everything that meant civilization" (Senate Document 1908b:19). Before all of the "Kickers" had time to adjust to the idea of accepting their allotments, much of the land had been lost in the land swindles of the early 1900's (see Senate Documents 1908a, 1908b, 1908c). During these difficult early years of the twentieth century, following a movement of Kickapoo to the old village in Coahuila, the establishment of a village in Sonora, and the return of these individuals to the allotments that had survived the land swindles, the Oklahoma Kickapoo settled down to lead a life of quietness and seclusion. Here they live today, unnoticed by the rest of the community.

Most of the Oklahoma Kickapoo presently make their home in an area approximately thirty-five miles long and three miles wide, located between the small rural towns of Shawnee and Jones, Oklahoma. This land constitutes the remains of their original allotments, some 8,000 acres of an original 22,000 acres, under government trusteeship. Most Kickapoo homes are located along in wooded areas some distance from highways, section line roads, and even subsection line roads. Of the approximately 325 Kickapoo individuals or conjugal and/or extended families in the area, about twenty-four annually construct either a bark house, a cattail house, i. e. an "Indian home," or both. As a rule, when a family constructs a bark and/or cattail house, a wooden frame house is generally constructed nearby. When the "Indian homes" are constructed adjacent to houses valued at more than $1,000.00 (and there are very few of these), they are used only for ceremonial purposes. If the house is valued at less than about $1,000.00, the family will live at least part of the year inside their "Indian home." These "Indian homes" are still considered "holy" by most Kickapoo.

For a male adult Kickapoo, supporting his family is primarily accomplished by maintaining a permanent job or by doing seasonal farm labor. A small number of men work at skilled and semi-skilled jobs at Tinker Air Force Base located in Oklahoma City or in small factories and businesses

located in Shawnee. Most of the male members of the tribe, however, do odd jobs, mainly farm labor, many working their own land that they have leased, and receive a small hourly wage depending upon the season of the year. Since the Kickapoo reside in a rural, semi-depressed economic area, they, along with other Indians suffer the brunt of this depression. Although the Indians of this area are not necessarily considered third class citizens by the local whites, they are nonetheless considered a "poor risk" and are given the lowest paying jobs. The Kickapoo are particularly viewed in this manner because of their cultural conservativeness and tendency to isolate themselves from other members of the community. As one school superintendent put it, "these people, the Kickapoo, are fifty years behind their time." This man reflects the attitude of many of the white people in the area.

Besides the absence of traditional economic pursuits, crafts, and general material culture (excepting the "Indian home"), there are significant socio-political differences between the Kickapoo of the late 1800's and the Kickapoo of today. Most noticeable, there has been a great reduction in the number of individuals who are fluent in kinshop terminology and there have been several changes in kinship behavioral patterns. The traditional rites of passage are no longer practiced. Political organization is no longer focused around chieftainship, the warrior society, and the village crier. In 1938, the adult members of the tribe voted to organize as "The Kickapoo Tribe of Oklahoma" under provisions of the Oklahoma Indian Welfare Act of 1936 (see Wright 1956:168). It is this form of tribal government, consisting of the tribe as tribal council and five elected officers, that exists today.

Although many significant changes have occurred within Kickapoo culture during the past eighty years, for the most part, the Kickapoo tribe of Oklahoma is self-oriented. This is most apparent when the per cent of individuals who participate in traditional ceremonies are compared with the per cent of Christians. Approximately fifty per cent of the tribe actively participate in traditional religious ceremonies and maintain belief in the "Kickapoo religion." Only about fifteen percent of the Kickapoo are

Christians and many of these are certainly marginal Christians. Besides the two polar religious groups, roughly four percent (overlapping with the Traditionalists) are participants in Peyote ceremonies. There is, of course, also a small group of people who seem to be transitional between these various groups. Of the traditional ceremonies, Spring Feasts, Adoptions, Ghost Feasts, and the Green Corn Dance are held with regularity by the Kickapoo. Another feature suggesting this tribe self-orientation is the extent to which many of the Kickapoo want to be buried in the traditional manner, and reject the idea of having a Christian burial. As one old man said, "I want to be buried the Indian way."

In conclusion, the Kickapoo Tribe of Oklahoma is presently in a state of transition — they are attempting to raise their standard of living while, at the same time, they are struggling to maintain their cultural and tribal autonomy. Only time will illuminate the outcome of this struggle. The attitude held by many of the Kickapoo over the fate of their tribe was adequately expressed by an elderly Kickapoo man when he said in broken English:

> Everything in those days was pure. Pure air, you know. Everything was good, but nowadays, everything got disease — germs flying around all over the country. We used to drink this water out here in the river. It was clear in the old days. There wasn't no white people around then. We had lots of room.

NOTES

1. For the most part, the early historical material herein is ab-abstracted from an unpublished manuscript by A. M. Gibson. Since completion of this report, however, Gibson's manuscript has been published (see Gibson 1963).

2. Throughout the remainder of this report, the author is only concerned with the Oklahoma Kickapoo and those people believed to be the immediate ancestors of the Oklahoma Kickapoo. This would, for the most part, exclude the Kansas Kickapoo.

3. The Cherokee Commission was "provided for by section 14 of the act of March 2, 1899 (25 Stat., 1005), so that it might enter into negotiations with such tribes in Oklahoma and the Indian Territory as have not yet concluded agreements for cessions of land" (ARCIA 1892:78).

4. The Indian tribes under the jurisdiction of the Sac and Fox Agency, Indian Territory, at this date was as follows: Sac and Fox, Absentee Shawnee, Mexican Kickapoo, Citizen Pottawotomie, and Iowa.

5. A discussion of whether the Kickapoo had clans will be presented later.

Kickapoo concept of disease will be discussed later.

7. Ritzenthaler and Peterson in their discussion of the Mexican Kickapoo state that in former days, "on such a hunt 1400 deer were killed" (1956:38).

8. According to Murdock, "for a group to constitute a genuine clan it must conform to three major specifications:. If any one of the three is lacking, the group is not a clan, however greatly it may resemble one in composition and external appearance. In the first place, it must be based explicitly on a unilinear rule of descent which unites its central core of members. In the second place, to constitute a clan a group must have residential unity. In the third place, the group must exhibit actual social integration" (1949:68). Even though Kickapoo groups fail to meet the first two of these specifications, the term "clan" is used throughout this report. The author sees no need to introduce a new term for the purpose of discussing Kickapoo "clans".

9. Besides the clans listed herein, Jones (1913:335) also lists an Elk and a Fox clan.

10. Ritzenthaler and Peterson (1956:43) list "Buffalo" as a bundle society for the Mexican Kickapoo.

11. Naming will be discussed in more detail in a section to follow.

12. It should be noted that although Jones (1913:335) lists **nototema** as "my brother, my sister" and Ritzenthaler and Peterson (1956:44) lists **nototema** as "brother, sister", this author lists **nototema** as "sibling". If the term is checked in Morgan (1871:293-382), **Nototema** is restricted to "brother". In theory, Oklahoma informants agree that **nototema** can be applied either to "brother" or "sister" but in practice, it is generally restricted for use by a male when referring to his brother. The use of younger and older sibling terms is more common with females.

13. The last Kickapoo chief by right of inheritance was a woman named Wahopohokowah (Wright 1951:168).

14. According to one informant, a member of the Eagle clan lived to the east of the Chief, a member of the Blackberry clan lived to the north of the chief, and a member of the Tree can lived to the west of the chief. The people living in these houses assisted the chief in the capacity of servant, e. g., they helped keep the chief's house and yard clean. The author does not know whether to interpret this as meaning that these clans were servants and, consequently, low status or whether they were servants and, consequently, high status. Among the Fox, members of the Wolf gens were considered low status people and "the chief gentes or royal gentes called them their waiters" (Jones 1939:74). The author was simply unable to determine whether the Blackberry, Eagle, and Tree clans were of high or low status. There is no evidence to suggest that clans function as a status determinant today.

15. Informants did not know whether these warriors were allowed special liberties such as was the case among some of the Plains Indians.

16. Although the Kickapoo had an Algonquian concept of manitou, it took the form of animism rather than a power concept such as **mana**. Jones in "The Algonkin Manitou" states that the Sauk, Fox, and Kickapoo have "an systematic belief in a cosmic, mysterious

property which is believed to be existing everywhere in nature" (1905:190). Although the work herein is a reconstruction, informants brought forth no information suggesting this "mysterious property". All data collected by this author suggests that the Kickapoo had an indefinite number of defined supernaturals.

17. The author was unable to determine when and how this probable Christian concept of an Evil God was adopted by the Kickapoo.

18. According to Hultkrantz (1953:73-83), a number of Central Algonquian tribes believed in soul-dualism. Although informants themselves did not make note of this concept, the application of the term "nokena" to both the shadow and the soul and the application of the term "čipaya" to ghost and spirit suggest that it was present. This soul-dualism concept is in accord with the Menomini, Sauk, and Fox believe that there was a life-soul, (in the case of the Kickapoo, čipaya or ghost-spirit), and a complementary shadow-soul, (in the case of the Kickapoo, nokena or shadow-soul).

19. The author did not see any of the bundles. A description of the bundles given by informants indicate that they probably looked much like the bundles pictured in Skinner (1925: plate 11).

20. Generally speaking, the moccasin game was played in connection with an adult male adoption; a bow and arrow contest was held at a male youth adoption, and a dice game was played at a female youth adoption. A woman's dance was always held in connection with an adult female adoption. These games and the dance, however, could be held at other times.

22. It has already been pointed out that in the moccasin game, the moiety of the deceased man always won the game. In the case of the bow and arrow contest, informants stated that either team could win and the leader of the winning team was adopted. Either the author improperly questioned informants about this matter or the informants misunderstood the question, for if this was the case, it was an exception to the normal pattern of adopting. In all other adoption ceremonies the adoptee was selected prior to the ceremony and the adoptee's moiety always won any game that was played. This was also the case among the Fox, i. e., "if the deceased was a Tokan, then the Kickos could not win and vice versa" (Jones 1939:66).

23. The Kickapoo held other dances but the author failed to collect data regarding same.

24. "It should be pointed out that the phonetic equivalents of . . . wapanowa (plural waponowaki) in Cree, Ojibwa, Algonkin, and apparently Menomini, mean 'sorcerer, wizard' whereas the Fox word designates a mythical bird (and in the plural, mythical birds" (Michelson 1932:12). For a detailed discussion of the Algonquian wapanowa, see Michelson (1932), especially pages 1-18.

25. There is the possibility that there may have been some connection between a wapanowa and a shaman who cured witchcraft. If this was the case, however, the author was unable to detect it.

26. This does not seem to be in accordance with the "foreign object" concept of illness.

27. Ritzenthaler and Peterson point out that for the Mexican Kickapoo, a child was given a "life name" to be used during its life and a "death name" to be used only after death (1956:57). An attempt was made to verify this with Oklahoma informants without success.

28. For a detailed description of a burial ceremony that took place in 1937 see Foreman (1938:238-248).

29. Traditionally, the Kickapoo may have practiced tree burials, scaffold burials, and extended and sitting earth burials for this was the case with their closest linguistic and cultural neighbors, the Sauk and Fox. See Skinner (1923:37). An Oklahoma pioneer reported that the Kickapoo practiced tree burial (Foreman 1937:27).

30. For a more detailed discussion of Kickapoo culture that is applicable to the present see Saeger (1957) and Wallace (1963).

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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

In terms of general editorial policy, it has been our aim to stress regional publications pertaining to Wisconsin and the adjoining states. These, it has been thought, are of primary interest to the readers of this journal and further, they represent publications frequently given only cursory attention in national journals. It has been appropriate, therefore, to review such materials critically and in sufficient detail to provide a service to local readers that is not duplicated in other journals. Occasionally, however, publications of such importance appear that even if they are not directly concerned with the local scene, they deserve to be brought to the attention of our local group. That is clearly the case in regard to the publication considered in this issue.

* * * * *

The Experimental Earthwork on Overton Down, Wiltshire, 1960. P. A. Jewell, Editor. Published by The British Association for the Advancement of Science, 3 Sanctuary Buildings, 20 Great Smith Street, London, S. W. 1. 1963. 100 pages; numerous plates, figures and tables. $4.50.

P. A. Jewell, a zoologist, served as editor for this report by the Research Committee on Archaeological Field Experiments of the British Association for the Advancement of Science, a committee which also included a plant ecologist, soil scientist, geographer, geomorphologist and several archaeologists. The report is an account of the construction of an earthwork designed to investigate by experiment the way in which archaeological structures are denuded and buried and specifically to provide precise information on the nature and speed of silting and soil movement. In conjunction with its construction, records were kept to allow more precise estimates of the time involved in the construction of such an earth-

work as well as to evaluate the efficiency of primitive tools known to have been available to the prehistoric inhabitants of the region. Various materials were incorporated within the earthwork so that the state of their preservation and possible movement within the structure can be determined through periodic excavation to be carried out at 2, 4, 8, 16, 32 and 100 years after construction. It can be seen that not only is archaeology a science concerned with long periods of time, but archaeological experiments require somewhat more time than conventional laboratory experimentation.

The project grew out of the Darwin Centenary meeting arranged by Section H (Anthropology) of the British Association in 1958. Among the many aspects of Charles Darwin's work that were discussed at this time was his contribution to field archaeology by experiments on the way in which earthworms bury all manner of objects. Since one of the major strengths of British and continental archaeology is what is called "environmental archaeology" which includes a careful consideration of all of the natural forces operating on a site and its contents and the use of the tools and concepts of many disciplines as an aid in archaeological interpretation, the suggestion to build an earthwork where various conditions could be controlled might well be expected to fall on receptive ears. British archaeology does have considerable history of experimental procedures to aid in archaeological interpretation and a valuable section of the present report is a brief history of such earlier archaeological experiments.

Barrows, as the British designate mounds, are a common feature on the English landscape. Originally it was contemplated that a round barrow might be constructed but finally it was decided to build one in a linear form, adjacent to an excavated ditch. The linear form clearly presented advantages in permitting convenient excavation at succeeding intervals through a section of the mound that could be uniformly constructed. The adjacent ditch provided an opportunity to investigate the manner in which this structure might gradually fill with debris. The report contains a meticulous description of the manner of construction of the successive layers in the earthwork, obviously an essential record if changes in these layers over times are to be studied. In a concluding

section various theories of weathering and slope erosion are summarized, giving an indication of some of the technical facets it is hoped will be resolved by the periodic excavations in the earthwork and ditch.

A variety of materials were buried in the earthwork, the samples being divided so that they were placed in two contrasting environments (on the modern turf surface beneath the earthwork and higher in the deposit on a chalk layer) and at regular intervals in the mound so that similar samples will be recovered in the planned exploration of the mound at periodic intervals. The materials buried were selected to be similar to those likely to have been buried in prehistoric times. They included: billets of oak and hazel, both charred and uncharred; cooked and uncooked sheep bones; cremated human bone; human bone of known blood-group; samples of wool, cotton, and linen; leather tanned in five different ways; fresh fractured flint to study the development of patina; and, pieces of pottery made from a known clay-type and fired at a fixed temperature. One additional experiment involved the sprinkling of **Lycopodium** pollen, previously determined to be absent in the local soil, on the surface beneath the mound so that its movement could be traced as the structure aged.

In the construction of the earthwork, the entire operation was carried out by hand since it was felt that this would provide a more uniform construction. What was involved was essentially building a linear mound roughly 100 feet in length, 23 feet wide and with the sides sloping at about a 20 degree angle to the center line, the maximum height being slightly over 6 feet. Firmly planted metal posts provide datum points to measure subsequent mound settling. The fill for the mound was derived from a rectangular pit excavated adjacent to it. This pit was slightly longer than the mound, roughly 10 feet in width and excavated to a depth of nearly 6 feet. Like the work of their prehistoric counterparts, this involved our British colleagues in excavating a borrow pit in an area where the turf and subsoil were only a few inches in thickness while the remainder of the excavation was made first in partially decomposed chalk and finally in unweathered chalk. Securing the mound fill thus was essentially a quarrying operation rather than one of carrying loads of loose sand

or earth as we would expect in an American Indian mound context. Figures of construction time are consequently in no way comparable to a New World situation. The bright, white linear mound and clean white pit that now stands out on the landscape on Decoy Heath, near Wareham in Dorset, would perhaps not fit our conception of the appearance of a mound but does serve to indicate how different in appearance aboriginal constructions may have been when they were first completed as compared to their later weathered appearance.

Although the entire construction was carried out with hand tools, a small portion of the pit was excavated with modern counterparts of prehistoric tools. These included the use of a deer-antler pick and a wooden maul by which the point of the brow-tine could be hammered into the chalk as a wedge to detach lumps. The picks were found to be efficient and remarkably resistant to breakage. Since the primitive counterpart of the modern shovel was considered to have been the scapula of some large animal, such specimens being not uncommon archaeological finds, several were used in the excavation. Workers preferred the scapula of a horse to that of an ox while the scapula of a small Indian elephant "was not much favoured." In contrast to the effectiveness of the picks, the workers found the scapula to be a very inefficient tool because the lifting-capacity of the blade was so slight. The reaction of the workers was that surely the prehistoric earth-movers must have hit upon some more satisfactory wooden equivalent of a modern shovel and perhaps these have simply not been preserved in archaeological contexts. The report contains several tables showing the relative number of buckets carried for the mound fill when the primitive tools were used as compared with modern tools. As might be expected, the modern tools were more efficient but actually little can be determined with any precision from the comparison since the size and composition of the teams performing the operations as well as the time intervals involved are markedly different. Still the differences are not large since the over-all rate for work with primitive tools was 3.0 cu. ft. per man-hour as compared with 3.58 cu. feet per man-hour with modern tools. It required a total of 1,155 man-hours using both primitive and modern tools to excavate and pile

4,018 cubic feet of material to form the earthwork. The authors of the report are commendably cautious about using these figures to estimate the man-hours required to construct other earthworks since the depth of the pits excavated, the character of the deposit and the time that would be spent in carrying fill are all varying factors in other situations. We can agree, however, with their conclusion that one is left with a profound respect for the scale and effort and organization that such constructions reflect.

This experiment was conceived of as one of a series, others to be constructed in areas of different types of soil and climate. As yet one can not evaluate the results of the experiment. The first cut in the finished mound was made in September 1962 but it has been decided to combine the results of this investigation with an account of the findings that emerge from a section to be cut in 1964. We shall have to watch the pages of the Proceedings of the Prehistoric Society to learn of these preliminary results but in the meantime it would be well to consider if this experimental approach should perhaps be imitated in a local context.

David A. Baerreis,
University of Wisconsin

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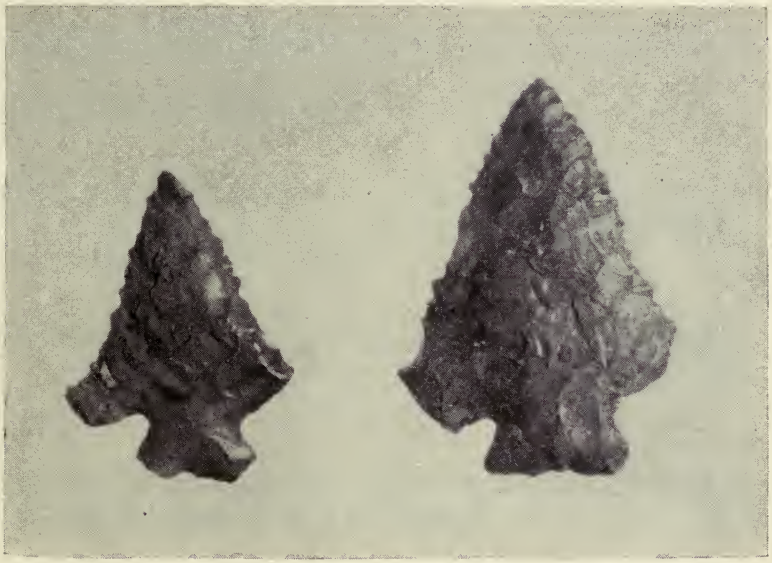
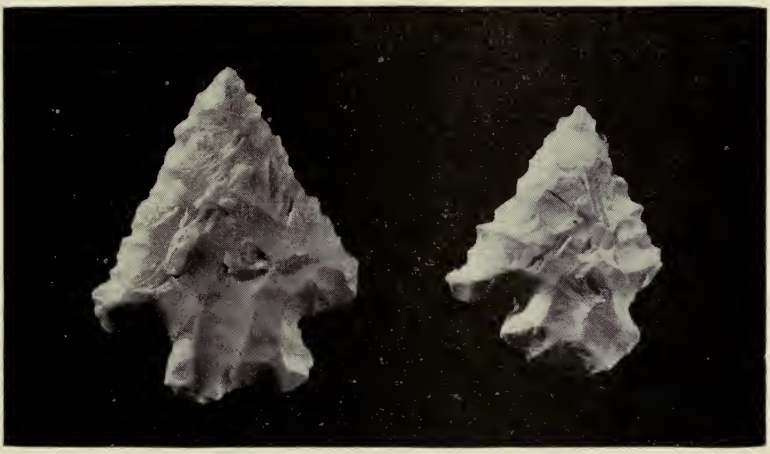


TRUNCATED BARB POINTS

Left: Section 28 Portland Tnshp., Dodge County.
Right: Section 22 Portland Tnshp. Dodge County.
Paul Turney Collection, Milwaukee.



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1962 EXCAVATIONS AT THE MORSE SITE: A RED OCHER CEMETERY IN THE ILLINOIS VALLEY

Dan and Phyllis Morse

University of Tennessee, Knoxville

As part of a joint National Science Foundation - Indiana University summer program to acquaint high school biology and social science teachers with recent advances in physical anthrolopogy, two weeks of field excavations were conducted at the Morse Site. Participants included Dr. Georg K. Neumann (Director), Department of Anthropology, and Dr. John P. Lunstrum, Department of Education, Indiana University; Dr. Joan F. DePena, Department of Anthropology, St, Louis University; Dr. Holm W. Neumann, Mr. King Hunter, and Miss Louise Robbins, Department of Anthropology, Indiana University; and 38 Institute members. Mr. Dan Morse acted as archaeologist for the two weeks of excavation. The purposes of the excavation were to provide the Institute participants with the opportunity to recover archaeological and skeletal data, and to help fill in gaps in knowledge of both the Red Ocher culture and physical population.

Part I: Archaeological Data

Dan and Phyllis Morse

The Red Ocher Culture got its name because of the characteristic presence of powdered hematite on top of skeletons (Cole and Deuel, 1937:62-63). We have been asked many times where the red ocher found at the Morse Site could have been obtained. A possible answer was supplied by the late Mr. Merrill Emmons who owned a large farm immediately to the south of the Morse Site. On his farm is an outcropping of hematite (specific location is SW Quarter of SW Quarter of Section 30, Kerton Township, T3N, R3E, Fulton County,

Illinois). About two-thirds of the distance down a bluff slope to the second creek bottomlands is a deposit of limestone in which there are pockets of hematite. The hematite occurs as flat oval pebbles, bright yellow to dark red in color, and range from the size of pea gravel up to about three by one and a half inches in dimension. This is the only concentrated deposit of soft hematite we are aware of in the area although it does occur occasionally as rocks in local gravel deposits.

Red Ocher "Mounds" and "Bundle Burials"

In an earlier published preliminary report (Morse, 1959), it was stated that the Red Ocher burials had been made beneath mounds. These mounds have turned out to be essentially Mississippi and Woodland constructions and apparently were completely unrelated to the Archaic burials. Red Ocher skeletons were buried in circular to oval pits at depths varying from 2-6 feet below the original ground surface of natural loess knolls. The knolls appear to have been slightly raised in absolute height only because of excess soil from grave pits being distributed on or around the filled-in pits. There is no evidence of soil having been brought to the burial site to construct an artificial mound. Therefore reports of Red Ocher "mounds" should be closely checked for evidence of multi-componentcy. It would be more than possible to expect other mound constructors to choose the identical burial sites utilized by Red Ocher people. A statement doubting field evidence of bundle burials in Red Ocher made in the earlier report is reiterated here. Not a single **in situ** bundle burial that could definitely be attributed to Red Ocher has been found at the Morse Site. Furthermore, all cremations or partially burned burials at the Morse Site are apparently Late Woodland; in fact, several were found directly over Red Ocher burials and in Late Woodland mounds.

Red Ocher Artifact Association and Settlement Pattern

The main difficulty in attempting meaningful interpretations of Red Ocher is the apparent lack of village or camp sites. This lack is apparent because, while Late Archaic artifacts, presumably including Red Ocher types, are seemingly scattered almost everywhere, there is no real concentration at any one spot. Added to this is the observation that artifact

types found associated with Red Ocher skeletons do not seem to be duplicated in habitation sites. One obvious inference is that special artifacts were made for burial and by and large were not mingled with utilitarian tools. There also is the fact that cache flints and a copper celt were assocated with children and a boatstone (atlatl weight?) was found with a female at the Morse Site. In addition, many of these artifacts appear to be trade items from the north and east. Can we then assume that lineage-owned goods obtained in a sort of "artifact ring" plus examples of local specialties being traded away are being indiscriminately buried with the dead no matter what their age or sex? By the adverb "indiscriminately", we refer to the type of artifact chosen for inclusion in a particular burial; although undoubtedly this choice did not seem as indiscriminate to the Red Ocher culture bearers as it does to the archaeologist. An example of a contrasting situation was found at the nearby Emmons Site where an Old Village-like Middle Mississippi component appeared to consistently associate certain sorts of artifacts with males and others with females (Morse, Morse and Emmons, 1961:132).

Some excavated village or camp sites would help immensely in interpreting Red Ocher culture as a whole. On the same bluff as the first cemetery excavated (F 772) are cultivated fields (not owned by Dr. Morse) from which the owner has allegedly collected grooved axes among other artifacts. Unfortunately, these have been given away and it is not even definitely known if they were picked up in one general area or as alleged, "all over." This is another example of the too common hearsay class of evidence.

Thus we have a situation whereby there is a large number of burials in a concentrated area but little concentration of camp debris. We feel that the Shell Mound Archaic complex in the Southeast is instructive here. In such cases in the Southeast, there appears to be seasonal occupation whereby villages break up into small units to hunt away from the large rivers and then again congregate in the villages to fish. Large shell heaps are built up by continuous seasonal occupation probably because the best fishing sites are relatively limited. Other individuals and small children might even have been left behind in the villages during the hunting season. In con-

trast, in the Red Ocher area, particular habitation sites do not seem to have been reoccupied. The only indication of seasonal permanency are the cemeteries. At and near the Morse Site are a number of springs and spring-fed creeks so water presumably was no problem. We suggest that seasonal camps or villages could be placed almost anywhere within the area with no loss in effective exploitation of the environment. Hence, the probability of successive occupation of an identical site would be low. In addition, the collection of firewood with relatively inefficient cutting tools might tend to cause a spacial dispersal of seasonal camps in their economic area through time. Another factor might be the intensity of raiding and hence a possible tendency for secretiveness and mobility. The concentration of burials in cemeteries plus one instance of actual intrusion of one grave into another indicate that at least the immediate area was occupied either seasonally or at times no greater than the memories of individuals participating in a minimal culture (band). Should we expect a similar settlement pattern in the rest of the minimal culture area or would we find evidence of scattered family units? This is a valid problem to be checked before the data is lost. Instructive here would be a study to see if the expected resources were abundant, variable, scarce, and/or regularly distributed at about the same place at the same season. Then we could make some educated guesses about residence rules, territoriality, size of effective units, etc. With an idea as to possible settlement patterns, sites could be identified and an artifact inventory built up.

Red Ocher Artifacts

The tentative trait list given in this paper will be elaborated upon in a later report. Examples of most of the artifact classes have been illustrated in earlier publications (Morse, 1958, 1959). Three cemeteries are represented, each on one of three contiguous ridge points, and here for convenience are called Sites 1, 2, and 3. Site 3 unfortunately did not have a later mound constructed on top of it and was accidentally discovered by a bulldozer during a fence-building operation. Parts of the burials were still **in situ** to a certain extent and though no artifacts were associated, the burial practices appear very similar to those found in Site 1; in fact, the lack of

artifacts emphasizes the possible close relationship. One of the very few incidences of finding a Marion Thick sherd in a Red Ocher cemetery occurred at Site 3. The sherd was in the humus layer to one side of the burial locations. There is no evidence whatsoever that the sherd was associated with the burials. This is an important point because there has not yet been an incidence of **definite** association of Marion Thick with Red Ocher. Pottery has been found in two other similar Illinois Valley situations. The three sherds from F° 11 were called "questionable" (Cole and Deuel, 1937:15) and were not even included in the site's trait list (ibid:65-69). The specific provenience of the rim sherd from a second site was not published (Wray, 1937). Our earlier statements concerning pottery in Red Ocher apparently still stand (Morse, 1959:206). The argument of whether pottery was a typical or even rare trait of Red Ocher is not helped by the rarity of Marion Thick.

It is at once apparent from a comparison of the traits for Sites 1 and 2 that there are a number of differences between the two cemeteries. An adequate interpretation depends upon what an observant ethnographer can tell us. Are these two different cultures or merely lineage differences? If the difference is cultural (and not sub-cultural) which would seem to be the case, is it an incidence of temporal difference and/or an example of shifting culture areas? For the present, we would argue for a temporal difference because even if there is a shift of cultural areas for two contemporary bands, the bands presumably would be contiguous and hence culturally similar. It is best, unless shown examples to the contrary and reasons for same, to assume a band on a high hunting-gathering-fishing level of cultural development operating within a defined culture area or territory, sometimes as a band and other times as smaller family units depending upon how effectively the environment may be exploited at certain seasons of the year. It should not be assumed that this culture was significantly unique in the history (and prehistory) of World Culture on a similar level.

Other Components at the Morse Site

Although our primary concern at the Morse Site was the securing of a greater assemblage of Red Ocher materials, the

discovery of other components was also of interest. Perhaps the most intriguing discovery was an Old Village (Emmons focus) house foundation superimposed upon a Late Woodland burial mound which was in turn constructed over a Red Ocher cemtery at Site 1. The house was rectangular, measuring about 15-17' x 13-15', and was associated with a group of four burials in one grave (see Morse, 1959), and two refuse pits. The Middle Missisippi Emmons Site (Morse, Morse, and Emmons, 1962) can be seen from this vantage point. The house was oriented approximately with the river with an apparent narrow doorway opposite from the river in the northern end of the western side. An excavation of varying depth had been made to level the floor since the house had been placed on the point of the ridge. A shallow baked clay circular hearth was centrally situated near the northern end. Other house features were disturbed badly by erosion, roots, and rodents. Off the river side of the house were two Mississippi pits. One is described in Morse (1959). The second pit contained a cache of three miniature pottery bowls, one of which was unfired.

A number of Late Woodland (Weaver sub-aspect) flexed and burned burials were found; in fact, all the mounds on the part of the site owned by Dr. Morse may be Late Woodland. Artifacts found consisted of flint projectile points, a mussel shell fish lure (?), a Weaver Cordmarked vessel, a mussel shell pendant, a turtle shell rattle, mussel shell spoons (including one 7½" long which probably was used as a vessel). and an antler projectile point. One extended burial was in a subfloor rectangular pit with no associated artifacts. At least two different Late Woodland components seem to be represented.

Below the point where Site 1 is situated, the ridge slopes downward and levels off as an eroded clay narrow ridge, and finally slopes down to the creek bottoms to the south. The level area south of Site 1 was examined for the remains of a Red Ocher campsite. Instead, an apparent Maples Mills camp was found. A few Canton sherds, flint chips, projectile points, shallow pits and rock hearth areas were discovered. In addition, a fragment of what may have been a variety of Dalton-Meserve projectile point was discovered on the

surface near the Woodland camp.

Some Comments on Special and Temporal Relationships of Red Ocher

Recently, some attempts have been made to correlate some of the sites which appear to be Red Ocher. (Faulkner, 1960; Morse, 1959; Ritzenthaler and Quimby, 1962). The lack of well documented sites is very apparent in these surveys. Trait lists are too vague and general to allow meaningful archaeological, much less anthropological, generalizations. This is particularly causing difficulties in comparisons to Glacial Kame and Old Copper, to which Red Ocher is culturally similar and apparently with which Red Ocher is engaging in a considerable amount of trade. The Titterington "focus" (probably at least a subaspect) is also closely related culturally although there are a number of similarities to the Shell Mound Archaic area. Also, it would seem, the Red Paint and other Late Archaic cultures in the northeast may belong to the same aspect. Hence, we go farther than Ritzenthaler and Quimby and propose that these cultures are the same culture if defined on an aspect or phase level. But we do not go so far as to state that Red Ocher (whether a focus or subaspect) belongs in both the Archaic and Woodland Patterns (Ritzenthaler and Quimby, 1962: 257). Typologically, this is like saying a bat is both a mammal and a bird.

Just as birds are not defined on the basis of presence of wings, Red Ocher or Glacial Kame cannot be defined on the basis of a few traits such as Turkey Tail points or Sandal-Sole Gorgets. Both of these traits (including cache flints and daggers) are widely distributed in the Eastern United States. If these cultures are normal, there should be several hundred traits for each and their clustering in time and space should provide significant and meaningful divisions. When emphasis is placed on one artifact type being mutually exclusive to the extent that others have a seemingly random distribution, then it is time to review our basis of classification because we are merely plotting the special distribution of one artifact, not a culture.

All that we will say about temporal relationships is that it is apparently still felt in some quarters that Old Copper is older than anything else. It may be, but we need some evi-

dence that it is. (Cf Mason and Mason, 1961, and Binford, 1962). Investigators of Red Ocher are going to be more and more dependent upon the Old Copper sequence to check de-

RED OCHER CEMETERIES

	TRAIT	Site 1	Site 2	Site 3
General:				
	Number of skeletons	22+	10	3
	Use of Red Ocher	X	X	X
	Individual graves the rule	X	X	X
	Burial in oval pits in cemetery	X	X	X
	Flexed Burials (dependent on pit size)	X	X	X
	Gorget shape: Rectangular with concave sides and convex ends	X	X	X
	Copper	X	0	0
	Galena	0	X	0
	Usually only a handful of Red Ocher	0	X	0
	Usually up to a gallon of Red Ocher	X	0	X
	Almost every skeleton association with artifacts	0	X	0
	1/16 or less associated with artifacts	X	0	X
Specific:				
Stone	Turkey Tail	0	1	0
	Flint Daggers	0	2	0
	Triangular to oval cache flints	75	0	0
	Stemmed Projectile Points	5	1	0
	Flint fragments (some utilized)	6	0	0
	Boat stone	0	1	0
	Stone Gorget	0	1	0
	Barrel-shaped Calcite Beads	6	1	1
Metal	Galena "Cube"	0	1	0
	Galena Bead	0	2	0
	Unfinished large Galena Bead (?)	0	1	0
	Heavy copper celt, rectangular in cross-section	1	0	0
	Heavy copper gorget	1	0	0
	Heavy rolled copper tubular beads	4	0	0
	Small heavy rolled copper beads	10-12	0	0
	Heavy copper awl, square in cross-section	1	0	0
Shell	Classic-shaped 2-hole Sandal Sole Gorget	0	1	0
	Large Conch Shell pendant (Drum Effigy?)	0	1	0
	Mussel shell spoon	1	1	0
	Conch Shell vessel	1	0	0
	Barrel-shaped conch shell beads of varying sizes	8	11	0
	Small disc-shaped conch shell bead	1	0	0
	Disc-shaped mussel shell bead	0	1	0
	Pearl and pearl slug beads	21	0	0
Bone & Other	Cut and incised bird bone tube	1	0	0
	Deer Metacarpal awl	1	0	0
	Shaved bone, antler, or ivory object	0	1	0

velopmental changes to the south. Few still feel that Red Ocher is actually Black Sand and we may safely assume it is earlier. It is really beginning to appear that today's Red Ocher problems should not be solved within the next decade, a prediction which was not very probable only five years ago.

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PHOTO NO. 1

Burial Numbers 18 and 19, Morse Site 2. Grave associations consisted of a granite boatstone, a calcite bead, and an unfinished galena bead (?). View is toward the East.

PHOTO NO. 2

Burial Number 21, Morse Site 2. Grave associations consisted of a 2-holed sandal sole gorget and a graduated "string" of 11 conch shell and two galena beads. View is toward the North.

PHOTO NO. 3

Burial Number 22, Morse Site 2. Grave associations consisted of two projectile points, one of which is vaguely similar in shape and chipping pattern to the TURKEY TAIL category. View is toward the West.

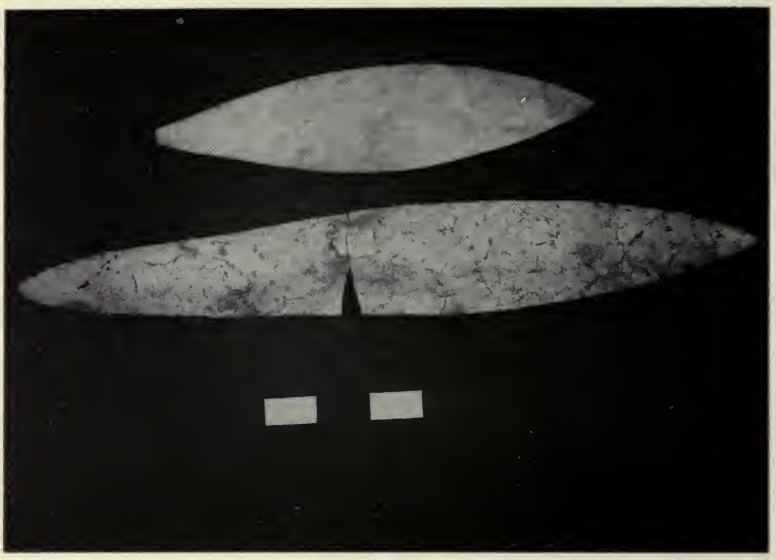


PHOTO NO. 4

Two "Flint Daggers" from Morse Site 2. The larger specimen measures 14" long and is broken. One fragment was associated with Burials Number 5 and 6 with an antler (?) object and a galena chunk while the other fragment was discovered in a nearby woodchuck disturbance. The smaller specimen measures 8½" long and was associated with "Burial 10" in a large woodchuck disturbance along with a conch shell pendant, a stone gorget, and a large mussel shell disc bead.

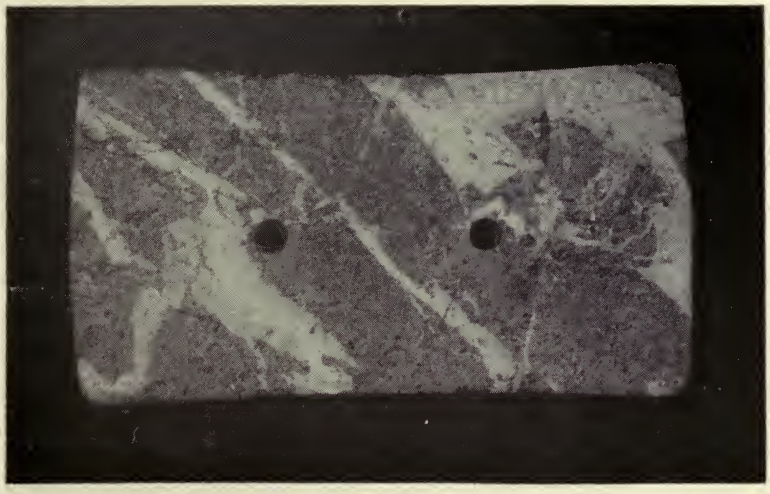


PHOTO NO. 5

Two-holed granite gorget found associated with "Burial 10," Morse Site 2. Length is approximately 4½".

PHOTO NO. 6

Conch shell pendant found associated with "Burial 10," Morse Site 2. It may be in the effigy of a drumfish. Length is approximately 7".

PHOTO NO 7 a, b

Two views of the boatstone associated with Burial Number 18, Morse Site 2. (See Photo No. 1) Length is approximately 5¼".

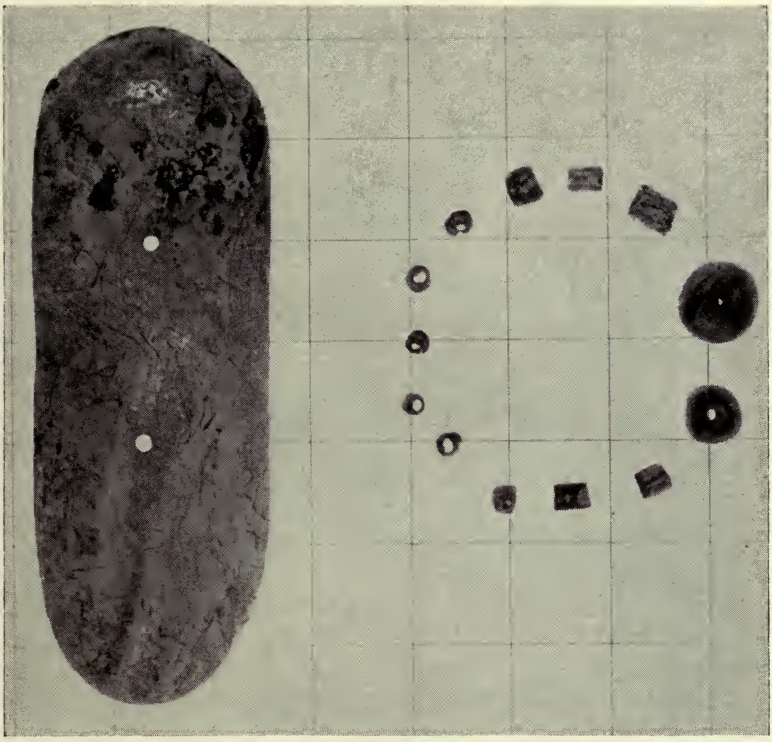


PHOTO NO. 8

Sandal sole gorget and beads found associated with Burial Number 21, Morse Site 2. (See Photo No. 2) Length of gorget is approximately 6½".

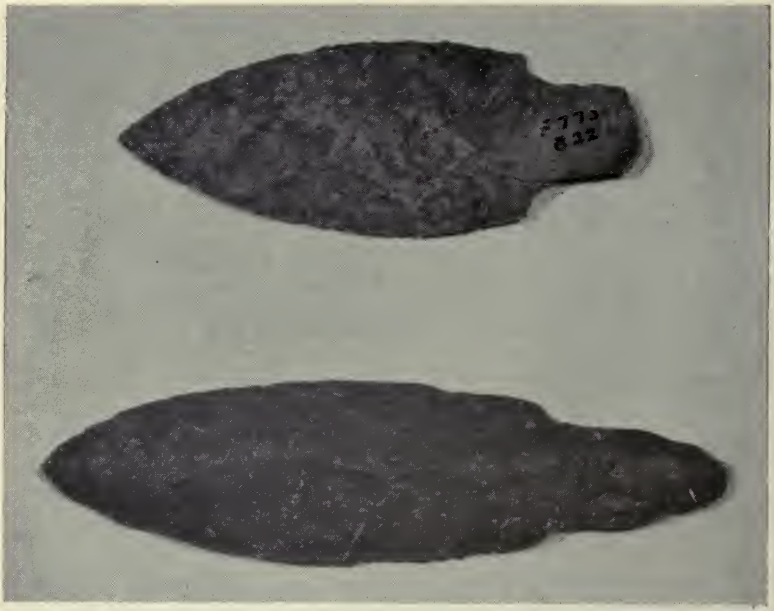


PHOTO NO 9

Projectile points found associated with Burial Number 22, Morse Site No. 2. (See Photo No. 3) Length of Turkey Tail (?) is approximately 5¾".

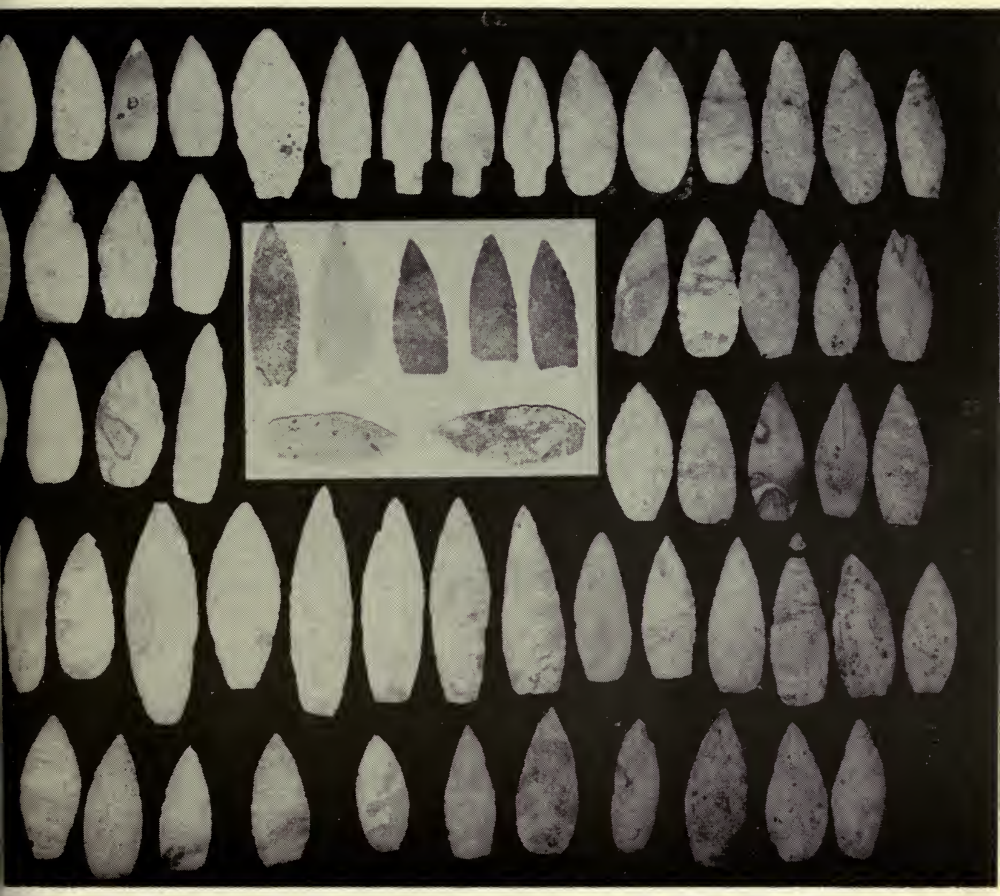


PHOTO NO. 10 — 67 of 68

Projectile points and "cache flints" found associated with Burial Number 2, Morse Site 1. Also associated were a conch shell vessel, fragments of a mussel shell spoon, a small shell disc bead and a badly corroded "string" of copper beads. With the exception of the copper beads found at the neck, the artifacts were scattered as if they had been within a wrapping which probably originally covered the skeleton. Specimens pictured range around 3 - 5" in length.

PHOTO NO. 11

Restored shell vessel found associated with burial Number 2, Morse Site 1. Length is approximately 6½".

PHOTO NO. 12-A

Burial No. 20, Morse Site 1. View is toward the East. The skelton has been partially disturbed by woodchuck activity.

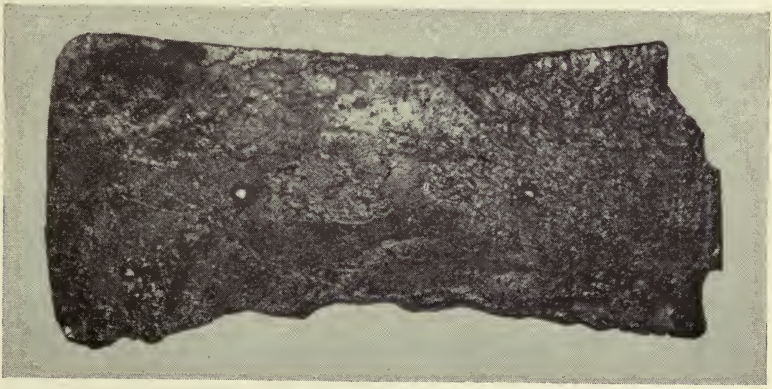


PHOTO NO. 12-B

The copper gorget was found in situ at the neck and in addition exhibits part of a cord impression on one surface. Length of gorget is approximately 5".

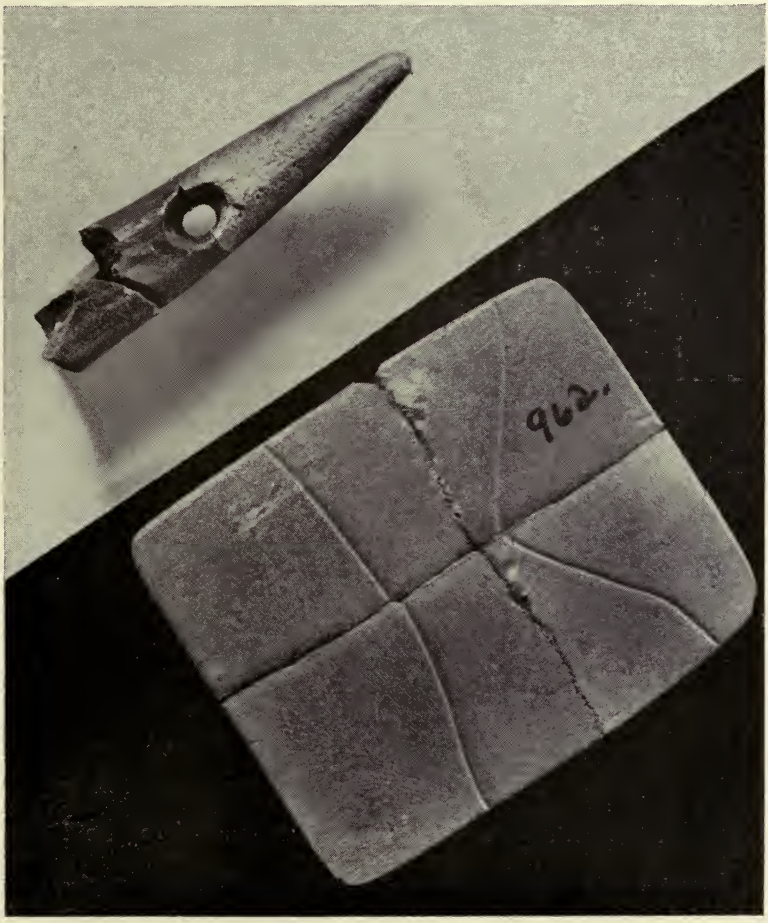
PHOTO NO. 13

Copper celt and four conch shell beads found associated with burial Number 36, Morse Site 1. Length of celt is approximately 6¼".

ANOTHER TOGGLE HEAD HARPOON FROM DOOR COUNTY

Mrs. Edward Wells

In the early spring of 1962, son John and I shouldered our packsacks and headed for a hike along the picturesque shores of Lake Michigan. We had selected as our objective the area in the township of Baileys Harbor. As we walked the shoreline, familiar dunes and land marks began to appear. It was apparent the usual cultural detritus of prehistoric man (such as wind blown fragments of bone, pottery and percussion



flakes) had been exposed by the melting snow and spring rains.

A few steps farther, I discovered a portion of charred antler tip, which upon examination, appeared to have been worked. I had read of Dr. Mason's discovery of toggle head harpoons at the Mero site at a point further north.

I became enthused and toyed with the hope that I had found one of the same. Inasmuch as the charred fragment was in wind blown sand at the base of a dune, I took a chance that it had been washed out and rolled to the lower level this spring.

From this position, I spent two hours with a trowel, peeling away the sand in paper thin layers. Finally a few percussion flakes, charred bone fragments, and more fragments of antler appeared. The deposit was thin — about 6" at its deepest penetration and 23" below the wind blown surface sand. It was apparently the remains of a small fire pit. The paucity of affiliated cultural objects leaves a great deal to the imagination, but enough of the antler fragments could be restored on the spot to indicate I had found a toggle head.

An inventory of associated objects are the following: a few hearth stones, charred and uncharred animal and turtle bones, charred antler (both worked and unmodified), percussion flakes, four small scales of copper, and four small poorly represented potsherds. The pottery fragments were seemingly body sherds of light, brick-red color, smooth surface, coarse texture with coarse granitic tempering.

Above this deposit was a small portion of another strata at the point of being blown and scattered. An undisturbed portion concealed a few flakes and one biface, ovate trianguloid point similar to late peninsular woodland type.

Upon arriving home, I assembled my finds and found the antler fragments restored, formed most of a toggle head with only a small portion of the base socket missing. The length is 60 mm. and the greatest diameter 14 mm.

Another group of charred fragments restored proved to be an antler prong unmodified.

To refer back to the locale of my finds, other portions of this blow have exposed numerous potsherds of woodland pattern, such as Madison plain, Madison cord impressed. Some of

the potsherds had a variety of rim and neck decorations such as vertical, diagonal and horizontal cord impressions; also rouletting and various forms of indenting. Mississippi ware is lacking from this site in my collections.

I am not attempting in this article to establish the cultural or temporal position of the objects. My intentions are only to give the information association with what I considered an interesting find.

MESH SPREADER WITH UPPER MISSISSIPPI CULTURAL AFFILIATIONS

Mrs. Edward Wells

In April of 1953, the family and I were out for a spring outing along Lake Michigan. These trips always incline toward archeological endeavors whenever possible. Inasmuch as the lake had previously been riding at a high water level, water and wind erosion exposed many interesting features.

Following the shoreline, I noticed a few shell tempered pottery fragments lying in the sand. A glance up the bank showed the distinct contour of a refuse pit, five feet wide, penetrating 20" down to a previous dune level. Apparently much of it had been washed away by wave action during the high water period. From this position we spent a great deal of time with trowel, knife and brush and explored the contents of the pit. It at first seemed to contain the usual run of cultural detritus dumped from the village, such as fish and animal bones, hearth stones, blocks of flint and a few pot-sherds.

As we penetrated deeper, the concentration of potsherds began to increase. I then found an animal tooth perforated for suspension. Nearby I found a small thin piece on which the corner was rounded off. Careful brushwork exposed three more fragments. These four pieces assembled to form a mesh spreader of turtle plastron with a length of 66 mm and a width of 55 mm. Seemingly it is very similar to the one found at the Raisbeck Mound Group, Dr. Chandler Rowe.

Associated with the spreader was the remains of a smooth

surface, shell tempered vessel with pie crimping decoration on the lip. The remainder of the vessel was plain. I also found two triangular uniface projectile points 200 mm in length, 50 smooth surface, buff-colored sherds and 16 woodland pattern sherds.

As I neared the end and base of the pit, I struck the rim of a pottery vessel. Cleaning away the sand, it was soon apparent that it was mostly in fragments but a great deal of it was present (140 fragments in all). I cross lined the remains with various colors of chalk to help simplify restoration. As the photograph shows, it was delaminated, warped and rather shop worn.

This vessel proved to be a most interesting project in itself. With the aid of my father-in-law, we restored it to its present condition, and it is a specimen that I prize very highly.

The color is buff red, merging into sooty black blotches. The paste is flaky and the tempering seems to be a fine sand. On one side of the neck, two holes had been drilled to patch

a crack. The body circumference is 43" with a height of 11".

A brief summary of other potsherds from the pit show the following characteristics: (1) 250 sherds with a smooth surface, flaky paste, tendency to delaminate, sand tempered, buff color, hardness of 2.5 Mohs scale; (2) 100 sherds with smooth surface, flaky paste, buff color shell tempered, hardness 2.5; (3) 16 sherds of woodland pattern, functional corded surface, grit tempered, color brown, hardness 2.5. Of the 16 sherds, 10 show a roulette and indented design at the rim and neck.

A small blow out on top of the bank yielded a few surface finds such as potsherds of both shell and coarse grit tempered ware, one end scraper and a few scales of copper.

I was with hope of finding arrow shaft smoothers along with other Upper Mississippi determinents, but if they are to be found, they are no doubt beneath a road that passes over the site. Although complete satisfaction comes only when a site has been exhausted of finds, the specimens found this day added unexpected delight to our trip.

The following issues of THE WISCONSIN ARCHEOLOGIST are out of print:

Volume 2, No. 3
Volume 3, Nos. 1, 2, 3
Volume 4 Nos. 3, 4
Volume 5, Nos. 2, 3, 4
Volume 6, No. 1, 3
Volume 7, No. 2
Volume 9, No. 4
Volume 10, No. 3
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Volume 18, No. 4
Volume 19, Nos. 1, 2, 4
Volume 20, No. 2

New Series

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Volume 10, Nos. 2, 3, 4
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Valume 12, all
Volume 13, all
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Volume 25, Nos. 1, 2
Volume 26, Nos. 1, 2

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

The Clam River Focus by W. C. McKern. Milwaukee Public Museum Publication in Anthropology, Number 9, 1963. x./74pp., 57 figures. $3.00.

The report on the excavations by McKern of the Clam Lake and Spencer Lake mounds in northwest Wisconsin has been long awaited. It presents the data on the cultural complex identified by him as the Clam River Focus. The 1935 and 1936 excavations were supported by the Milwaukee Public Museum, and by the University of Wisconsin under the stimulus of Ralph Linton. Of the 21 students who worked with McKern during the two seasons, ten have continued in anthropology and are now responsible leaders of contemporary work. For a variety of reasons publication of McKern's interpretation of the excavations was postponed. The field program of 1935 and 1936 included, in addition to the excavation of the two large mounds which are the subject of this report, surface surveys and some excavation of habitation sites and smaller mounds. At a later time it is planned to present the results from the smaller mounds and other survey data. The two large mounds excavated "identified a manifestation not previously reported for Wisconsin and support a conclusion that Indians built burial mounds in the early historic or protohistoric period in northwestern Wisconsin."

The report itself begins with a section entitled "Ecology" which emphasizes that much of Burnett County is in the pine barrens of northwestern Wisconsin but that its southern border has a conifer-hardwood to southern hardwood forest type. Many of the varieties of trees and plants are listed as well as the considerable variety of fauna in the area available for exploitation by the Indians. Perhaps in a later report an at-

tempt will be made to indicate the different types of adaptations to the environment by the several prehistoric or early protohistoric cultures.

In his survey of the historical background and in the chapter on ethnic identification, the occupation of northwestern Wisconsin by Dakota Sioux groups is emphasized. The cultural practices and materials obtained from the two mounds are compared with those of the historic Algonkians and Dakota Sioux and with the late prehistoric material from central and northern Minnesota presumably ancestral to various bands of the Dakota. The author's closing sentences of the report give his interpretation of the identification of the builders of the mounds. "The burial practices and artifacts characteristic of the Clam River Focus closely resemble the similar culture-indicative evidence from numerous sites in northeastern Minnesota thought to represent the prehistoric and protohistoric cultures of the Dakota Sioux known to have resided in that era. Thus it is submitted that the authors of the Clam River tumuli in all probability were some division of Santee Sioux."

The main body of the report is on the excavations, the materials recovered and a cultural classification based on the trait complex of the Clam River Focus derived from the interpretation of the evidence. The Clam Lake Mound contained 51 separate secondary interments, with a minimum number of 115 individuals represented. This 14 foot high structure with a width of 90 feet was the accumulation of four mounds separated by three strata. A four foot high mound, 34 feet in diameter, covered a deposit, primarily pure red ochre, of more than 200 cubic yards which had been placed at a slight elevation over a stone fireplace. If the fireplace had been in an Effigy Mound it would definitely have been called an altar. After the lapse of some amount of time, the second mound accumulation was begun by spreading a yellow sand layer over much of the first mound surface and then placing six separate burial bundles on the prepared floor. These were then covered by a 3 foot layer of earth to form the second mound. Its surface supported vegetation for an unknown length of time, then was cleared, and a layer of beach

sand spread over it. Then a second burial ceremony deposited fifteen groups of human skeletal material and this was capped by a three to four foot layer of earth. On the basis of the evidence of the roots of at least fourteen trees McKern suggests that the surface of the third mound construction was open to vegetation growth for at least twenty years. The same procedure was followed for the fourth mound construction which included some twenty-seven deposits of bone placed on a beach sand layer and capped with earth.

Each of the six burials in the Mound 2 construction was contained in, or associated with birchbark. There were bits of beaver skin, checker weave textile fragments, two pottery elbow pipes, a small pottery vessel, a projectile point and a large Clam River rimsherd which are not illustrated in the report. The twelve female (?) crania of Burial 40 had crushed occiputs, perhaps from a club. What a story could be built from that! McKern, fortunately, did not. Of fifteen burials in Mound 3, only five had associated birchbark. Few observable grave goods were associated with these burials. Perhaps the most important were three unnotched end-scrapers. Two broken pottery vessels were in Mound 3, and associated with the pottery were two fire stones and two quartz scrapers. The two vessels are identified as "Clam River, Wrapped-Stamp, Globoid" type on p. 31 and 56-57. The birchbark containers were "bowl" shaped and apparently used to carry the skeletal remains to the mound.

The mound surface of No. 3 was available for vegetation growth, with good-sized trees, at least two of them being pines, occupying the surface before clearing and the deposition of the beach sand. Mound 4 begins with beach sand and the deposition of 27 interments, not one of which had birchbark with it. One pottery vessel called "Burnett stamped conoidal" and identified as "foreign in character to Clam River ware" was in the fill of Mound 4 but was not associated with burials. There were sherds in the fill of this mound layer of Clam River type but they are not illustrated. Other cultural material include short sticks of wood, reeds, twigs, logs and sticks. A second vessel in the last mound construction, this one a Clam River type, was within one and a half

feet of Burial 1.

The Spencer Lake Mound was constructed in the same manner as Clam Lake. Fifty-eight separate secondary burials were recovered and included remains of at least 182 individuals. One noteworthy difference is that two burials of this site were made in pits below the mound floor. This mound contained a pottery elbow pipe, triangular arrow points, a rather crude arrow shaft polisher, bark with some of the earlier burials, red ochre with a minor proportion of interments, a fireplace on the floor of Mound 1, and a few sherds of Clam River pottery in the mound fill. One burial was the remains of a cremation carried from the spot of incineration. One small pottery vessel was with Burial 34 made beneath the mound floor. The other sub-mound burial No. 56, had a number of wooden poles associated with it and was interpreted as a structurally covered grave. A number of "boards" were found on the flood of Mound 1. These were 9.9 feet by 1.4 feet; 5 feet by 1.1 to .9 foot wide and .1 to .2 thick," with the long-cutting stroke of a **steel** (boldface mine) axe marked the broader end." Another board which extended under subfloor Burial 34 was 8 feet long and 1 foot wide at the other end.

No reference is made in this report to an earlier report of an unusual find in the Spencer Lake excavation. This is essential to an understanding of this report and the interpretation of the cultural and chronological position of the builders of the mound by McKern. In **American Antiquity**, Vol. 2, pp. 147-148, 1936 there appeared the following statement. "The most important discovery in this mound was the complete skull of a horse found associated with one of the burials. This was clearly an inclusive feature, and dictates a protohistoric or early historic date for the erection of the tumulus. However, the absence of any trade objects of European provenience, or any other indication of contact with white traders, renders it difficult to ascribe to the mound an age under two hundred years. It is highly improbable that the horse could have been introduced into Wisconsin from the northern Plains earlier than two hundred fifty years ago. The time limitations so defined point definitely to the Dakota

Sioux as the author of these relatively large northwestern Wisconsin mounds." There is an acknowledgement to Dr. Stirton who reported on the **Equus** caballus specimen, and a bibliographic reference to J. C. Ewer's 1955 publication on the horse in Blackfoot culture. Much of the argument and interpretation of the Clam River Focus as to time and ethnic identification is based on the burial with the associated horse's skull. But — the horse skull is not described as being with the burial nor is there a reference to it in this published account.

In the **Wisconsin Magazine of History,** Vol. 26, p. 156-7, McKern published in 1942 the following statement: "This variety of Woodland culture has been termed the Clam River Focus. The mounds which have been excavated have produced convincing evidence of a rather recent origin. Basket-like containers of birchbark found with burials were in a sufficiently good state of presevation to permit removal. The claws and all the fur of a beaver skin were encountered in another grave. But of greater significance were a piece of charred wood, found centrally on a mound floor, which exhibited the long chopping stroke of a steel axe, and the entire skull of a western type of mustang pony found with a burial. These evidences of European influence definitely place the time when these mounds were built as subsequent to the introduction of the white man's materials."

So — what happened to the horse's skull which is so pertinent to the full page illustration on p. 68 of this report showing a Siouan platform burial with horses skulls on two supports of the platform, and horse's tails on the poles on the other end of the platform? The skull was found in the Spencer Lake Mound which also had the boards (my term) one of which had been worked with a "steel axe" (McKern's term).

Now, this reviewer will engage in what is sometimes called "hearsay evidence." About five years ago an individual — or individuals claimed that the horse skull was put into the Spencer Lake Mound a few years before the 1936 excavation, which would have meant a fairly good sized excavation pit to put the skull in the lower part of the mound. No such pit is shown or mentioned in the description of the mound ex-

cavation. George I. Quimby tells me that the claim of the intrusion of the horse skull was made at a meeting in Beloit which he and A. C. Spaulding attended and that both of them strenuously denied that it could have happened, because there were no signs of intrusion in the earth above the skull. Futhermore the skull was in tightly packed earth identical to that of the surrounding area of the mound and that the skull was filled with the same type of earth. It is their contention that the skull was inclusive. In addition David Stout and Joffre Coe also participated in the excavation. I had a close association with all four immediately after their summer field work. If anything had been wrong with the **in situ** interpretation of this skull some one on the dig would have noticed it, I have never known a group of students to let their superiors "get away" with an erroneous interpretation. The recent pit in the Clam Lake Mound was noted and described. It is difficult to believe that Spencer Lake was "salted." The Rice Lake Mound recently described by Leland Cooper was built during the early historic period and has material similar to that found in the Clam River Focus.

This review has noted above the nature of the three wood specimens I have referred to as "boards," one of which is said to have the marks of a metal axe. Were these also put in the mound by the horse planters — or did the Indians build the mound over a barn? I have never heard of such specimens in an Indian mound but am willing to regard them at the moment as "native" and perhaps the remains of a travois pulled by the faithful horse. (I know the travois had poles and not planks.)

I don't think the evidence for the first appearance of the horse in the Minnesota-western Wisconsin area is soundly established. If the Oto had a horse in 1680 near Peoria, a horse could also have been along the Upper Mississippi by that time. The absence of specific European materials in the mound would probably indicate a time near 1700 for Spencer Lake.

McKern's archaeological comparisons are based on three reports by Wilford and these are the only archaeological citations in the bibliography. The Clam River Focus pottery is

stated to be almost identical to the Headwaters Lakes Aspect of Wilford, or to put it another way to Blackduck pottery. McKern notes the similarities of the Clam River Focus to the Mille Lacs, Headwaters Lakes and Rainy River complexes of Wilford and notes that there is a similarity to all three and not to any single one of Wilford's groups.

The illustrated ceramic material from the Clam Lake Mound belongs somewhere in the Blackduck ceramic group. This now seems to have a range in time from A. D. 700 to about the historic period on the basis of radiocarbon dates and associations with historic material. According to J. V. Wright, Blackduck is found as far east as the mouth of the Pic River on the east side of Lake Superior by A. D. 1000 and continues there to the historic period. There is now underway in Minnesota a number of analyses of Blackduck which will eventually isolate distinctive types. I will guess that the Clam Lake pottery dates around A. D. 1200. The single vessel called by McKern "Burnett Stamped Conoidal" has a similar surface treatment to sherds from Mille Lacs, to the grooved paddle treatment on some Grand River pottery and to the misnamed "simple stamped" pottery of the Plains.

The shift in emphasis toward secondary burials, secondary compound and secondary group burials begins toward the end of Middle Woodland. The ossuary burials of some of the Iroquoian groups is, I think, only a special late elaboration of this practice and cannot be the direct source for a general practice spread over a wide area. The practice of skeletal mutilation is also one with a long history in the Great Lakes area.

I suspect that the Clam Lake Mound is earlier than Spencer Lake as did McKern. It may well be Dakota Sioux but whether it is Santee or not is less certain. I suspect Spencer Lake is around A. D. 1700, if the horse and the "boards" are definitive of European contact, somewhat earlier if both prove to have been wrongly interpreted. In any event, an attempt should be made to obtain radio-carbon dates for materials from both mounds. This report has emphasized the available cultural data for two Wisconsin mounds. May we hope for additional reports of some of the other Woodland groups in

Wisconsin that will serve to present the distinctive characteristics that caused McKern to group them into classificatory units?

James B. Griffin
University of Michigan

Indians of the Woodlands from Prehistoric Times to 1725. By George E. Hyde. The Civilization of the American Indians Series, No. 64. University of Oklahoma Press: Norman, 1962. $5.00.

The scope of this book is meant to be broad, encompassing the story of the American Indian from Archaic times onward, utilizing information from archeology, ethnology, history, and tradition. Language groups provide the continuity for the drama with the Siouan and Iroquoian stocks as chief actors. For sections dealing with prehistory the author depends to a great extent upon general reviews of the literature such as **Indians Before Columbus** by Martin, Quimby, and Collier (Chicago, 1947), H. C. Shetrone's **The Mound Builders** (New York, 1930), and **Archeology of Eastern United States,** edited by James B. Griffin (Chicago, 1952). Chronologies suggested by archeologists are dismissed as "conjectural," an interesting exception being dates based upon tree ring studies at the Kincaid site in southern Illinois. Radiocarbon dating is mentioned only on page 224, where the results mentioned are termed "incredible," even "shocking."

The time scale actually used is one substantially more compressed than that in works of the pre-radiocarbon era. Speaking of the Ohio Valley, the author explains (p. 204) that while ". . . archeologists have found village ruins, mounds, and burials . . . they have given most of these remains an impossible dating — at times as far back as the year 1300 — which simply will not fit in with the traditional and historical evidence." He goes on to comment, "It is not reasonable to assume that only ancient Indian remains are here and that all indications of the Indians of the period 1650-1700 have vanished." A similar thought is expressed on page 255: "One would suppose that modern archaeology should be a great aid in clearing up obscure points concerning these Indians in

South Dakota between 1680 and 1750 . . . [The] archaeological reports add many important facts to our previous knowledge, and then make it impossible for us to use these facts by insisting that all the village ruins and other Indian remains are of a time prior to 1600 and that most of them date before 1500." Archeologists do not, of course, insist that **all** Indian remains in South Dakota are of a time prior to 1600, and it is certainly a gross understatement to say that archeologists date Indian remains in the Ohio Valley **as far back as 1300.** Hyde's readers are given no idea of the actual antiquity of man in the Woodlands; the accepted time depth of the Archaic Period is not even mentioned to be refuted.

The book suffers from the author's unfamiliarity with the handling of archeological data. There is, for instance, no reason to assume that an Indian group common in an area of historic times must also be represented among the archeological cultures which happen to be known to science. An example from Wisconsin illustrates this well. The Fox were a tribe prominent in Wisconsin history for over a century, yet when the first documented Fox village was excavated (**Wis.** Arch. 44 (1): 1-57, 1963), the specific archeological culture of the Fox was found to be unique for Wisconsin. **Indians of the Woodlands** will do little to dispel the popular notion that all Indian artifacts in a given locality originated with the one or few Indian groups whose presence in that area is known from historic records. When information to the contrary is lacking it seems logical to many that a small scattering of arrowheads in the Rock River Valley must be evidence of a skirmish in the Black Hawk War or, if in the Minnesota Valley, relics of the Sioux Uprising of 1862.

The stream of events in the book is dominated by sweeping migrations and cataclysmic confrontations of Indian nations. This illusion is created in several ways: (a) compression of the time scale, which accelerates all action in the manner of a silent film projected at the speed of modern "talkies;" (b) treating archeological cultures too often as though they existed only in the locations at which the University of Chicago and other institutions happened to conduct well reported excavations; (c) regarding type-sites as

centers of distribution and diffusion; (d) relying on outmoded theories of mass migrations to account for cultural similarities, differences, and changes; (e) using the unique tribal dislocations of the late 17th century as a model for much of the action in the book; and (f) paying scant attention to material culture and then often only in connection with a conjectured group relationship (e. g., "The Omaha Indians had in their tribal sacred bundles an ancient bear canine tooth and a large clam or mussel shell, which fact, taken with the tribal tradition of former residence in the Ohio Valley, suggests that the Omahas were of the old Indian Knoll shell-heap groups." — p. 8).

The author's use of archeological, historical, and ethnographic data is highly personalized, but the readers are given few clues that this is the case. For reasons of his own Hyde applies the term "Effigy Mound culture" to archeological complexes from Manitoba to the Ohio River (pp. 39, 41, 74-75), arguing that the Effigy Mound builders created only circular mounds after leaving the Wisconsin area (p. 74). Without crediting Radin for the original idea or indicating that it has not been seriously considered for over 30 years, Hyde indicates that the Winnebago were responsible for Effigy Mound culture (p. 75). Moreover, he uses "Winnebago" in a startling way, for we are cautioned (p. 103) to "keep in mind that the old Winnebago group not only included the Iowas and Otoes, but the Missouri tribe and probably also **the Mandans, Hidatsas, and Crows**" (emphasis added). The Mandan and Hidatsa are assigned a former homeland in west-central Wisconsin on a map (p. 9) which also places the Ponca and Osage originally near Indianapolis, Indiana, and the Biloxi in eastern Kentucky. Hyde speaks with apparent authority on Wisconsin prehistory, yet he includes in his bibliography only one Wisconsin publication on Wisconsin archaeology other than Increase A. Lapham's 1855 **Antiquities of Wisconsin** and Lapham's monograph is erroneously listed as an 1865 imprint. For information on Aztalan he refers readers not to Barrett's comprehensive **Ancient Aztalan** or even Lapham's classic early account but to brief summaries in three secondary sources (p. 82).

Hyde's uncritical or selective use of sources is shown by his extending the occupation of Aztalan into the mid-17th century on the basis of the much criticized Kincaid site tree ring dates, and by his suggestion that it was here that the Winnebago fled for refuge from warring Algonkian tribes shortly after Jean Nicolet's visit to Wisconsin (pp. 101, 103). Archeologists are not in unanimous agreement on the time that Aztalan was occupied, but Hyde stands alone in believing it was occupied during or even close to the period of French contact. The author also states (p. 99) that ". . . the Winnebagoes, Iowas, and Otoes had an ancient song, which the Iowa missionary stated was in the old Winnebago dialect, which recounted how the three tribes had lived together in a great fort of earth and timber on Rock River — where the earth-and-timber fortress of Aztalan was located," citing Schoolcraft (Indian Tribes, III: 267, IV: 231) as his source. On consulting the source cited it is readily seen that the Indians did not indicate that the fort was on Rock River or any other precise location; there was no indication that the song, a song of the Ioways, was in an "old Winnebago" dialect; there was no indication that the several mentioned tribes had ever lived **together** in a fort or that the forts referred to by the Winnebago and Iowa were the same one; and there is no mention of the Oto in Schoolcraft in connection with the song or the fort.

Next to the Iroquois, no group is deprecated more in this book than recent generations of archeologists. One common fault seems to be an alleged failure to sufficiently recognize the role of Siouan peoples in the prehistory of the Ohio and Upper Mississippi valleys. I find this to be a curious indictment since the author has not presented or at least has not been aware of current hypotheses which involve Siouans prominently. He could have cited a current line of thought which regards Aztalan as an intrusion of Siouans bringing an advanced form of Mississippian culture into Wisconsin from the greater St. Louis area. He also could have indicated the accepted probability that Siouans contributed importantly to the Mississippian climax culture which developed at the Cahokia mound center, which was in its day the largest In-

dian ceremonial center in the United States. Instead he muses, "It seems incredible, but neither history, Indian tradition, nor archaeology gives us any information about the identity of these Mississippian tribes in the north" (p. 89).

In the words of its author, "The book as it stands is an experiment, and how much use it may be remains to be seen."

Robert L. Hall,
Illinois State Museum

Archaeology Made Simple by Rhoda A. Hendricks. Doubleday & Company, 1964. xi / 180 pages. $1.45.

The title of this large, paperback book might entice the purchaser seeking a simplified introduction to the field. While it may be helpful so far as classical archaeology is concerned, that of the New World is compressed to a single chapter of eleven pages. The area north of Mexico is covered in two pages, these being devoted to the Southwest. Here we learn that traces of early habitations can be dated as early as the first millenium A. D.! The author has also written Latin made simple. **Ne sutor supra crepidam.**

D. A. B.

THE RIDDLE OF THE SPENCER LAKE HORSE SKULL

Robert Ritzenthaler

In the light of Dr. James Griffin's review of McKern's CLAM RIVER FOCUS monograph in this issue of the **Archeologist,** which raises the question as to what happened to the horse skull recovered from the Spencer Lake Mound, it seems appropriate to present at least some of the case history involved.

In 1962, as the monograph was being prepared for publication, into the Museum came Mr. P., a middle aged college teacher (on another matter). He happened to mention that he and a friend had "planted" the horse skull in the Spencer Lake mound as kids back in about 1928. He was quite contrite about it and agreed to prepare a statement of the facts as best he remembered them, after some 34 years. A copy of

this was sent to McKern with the question raised as to whether this information would affect his time interpretation, which was based **partially** on the factor of the skull being part of the Indian burial, and, as the appearance of the horse in Wisconsin was not recorded until the 1770's, it was another bit of evidence for a rather late dating of the culture. McKern responded with a statement (Appendix A) to the effect that he was convinced that the skull he excavated was not the planted one, but inasmuch as there was a reasonable doubt (and that the horse skull was not crucial to his argument anyhow), he would make minor revisions and suggested that his statement be published in the monograph. Mr. P., however, requested that neither his or McKern's statements be published, a request that was honored, until the Griffin review (see The Bookshelf) again raised the question at which time Mr. P. prepared a final statement (Appendix B), this time for publication. This writer is relieved to be somewhat extricated from a difficult situation and to see placed on record some of the information that has been hearsay in Wisconsin archeology for the last several decades.

So what is the answer to the riddle? On the one hand there is the statement of McKern, a highly competent, professional archeologist that the skull was removed from a non-intrusive pit. Furthermore, this is backed up by at least several of the crew members, then college students, now placed as professional archeologists in various parts of the country. Such testimony cannot be lightly dismissed. If the horse skull was a plant, it would almost have to have been the result of horizontal burrowing from the bottom of the vertical pit by the planters, and then, barely large enough to hold the skull, a somewhat unlikely set of circumstances. Furthermore the side-intrusion would have shown up, although it might be more easily missed than a vertical one. Some horizontal burrowing was admitted by the planters, but the precise circumstances could not be recalled.

On the other hand, there are the admissions of two non-archaeologists, albeit respectable citizens, that the horse skull was planted by them in the Spencer Lake mound as a childhood prank, and their only interest in the matter is to at-

tempt to set the record straight. They have gone to some trouble and expense to do so, and their efforts should not go unappreciated.

The identification of the horse as a western mustang would seem to add weight to the non-plant case. However, Mr. Walter Pelzer, mammologist at the Milwaukee Public Museum, tells me that western mustangs were imported for use on Wisconsin farms in considerable number during the early part of the twentieth century. In examining the skull he noted rodent marks on the cranium and mandible of a size which "could have been made only by mice," and made the observation that "this skull must have laid above ground for awhile." Mice have been known to use the burrows of other rodents for a few feet below the surface, but the appearance of the teeth marks on various surfaces of both the cranium and mandible would require a maze of tunnels . . . a highly unlikely circumstance. This is fairly strong evidence for the plant explanation, for Mr. P. and friend state they picked up the skull which was laying in a nearby field. The strongest point in favor of the plant case in my way of thinking is in terms of probability. It does seem incredulous to this writer that in the only mound in Wisconsin where a horse skull occurred, one skull went in, one came out, but that they should be different skulls. The conclusion I have reached is that the excavated skull was the plant.

The final proof will arrive in the form of radio-carbon dates now being run at the University of Michigan. We should have them in time for publication in the next issue which we await with bated breath.

For obvious reasons we could not publish all the correspondence in the case. Enough has been said, however, to indicate the confusion and problems caused by a plant. We hope the lesson is apparent to all.

APPENDIX A

The Spencer Lake Horse Skull. Response to Mr. P.'s Letter of June 28, 1962

By W. C. McKern

In regard to the presence of the horse skull in the mound, Mr. P. has informed me, in a letter addressed to Robert E. Ritzenthaler (1962), that in 1928 he and a friend, M. C. V., dug a centrally placed pit in ". . . the longest * mound in a group located on low land on the shore of Spencer Lake." Their excavation was about four by five feet in cross dimensions and penetrated to a depth of six or seven feet ". . . straight down in the center." They found ". . . absolutely nothing." Before filling the excavation they placed a horse skull, that was found nearby, in the bottom of the hole. He believes that he oriented the skull either north-south or east-west, ". . . minus the lower mandible."

Mr. P. is to be commended for bringing this information to our attention. However, if Mr. P.'s facts are accurately stated in his letter, and I have no reason to believe that they are not (in fact they deserve no consideration unless they are), the skull that he and his friend buried can not possibly be the skull that we found. In fact, there is considerable doubt that his mound is the one that we excavated. He describes it as the longest * mound in a group of mounds located on low land near the lake shore. The mound that we excavated was a high, laterially round, hempispherical tumulus that no one would ever describe as "long," standing alone, unassociated with any other mounds as far as the eye could see, on relatively high ground a considerable distance from the lake shore. There are no other mounds within the reasonably near vicinity. We were told by interested citizens of the locality that there was a group of mounds, smaller in size and including some short linear shapes, elsewhere on the lake shore, but we had a full season's work before us and did not so much as visit the site. Elsewhere in the general region,

* (Editor's note: In the copy sent to McKern the term largest was erroneously typed longest.)

however, I have seen a number of groups of relatively low mounds, including both round and long shapes.

But assuming that Mr. P. has entirely forgotten the shape, location, and physical associations of his mound, which hardly seems reasonable, the following conflicting facts must be given critical consideration. His excavation was in the center of the mound and limited in size to approximately four by five feet. An earlier, centrally placed excavation of about this size, although several feet deeper than the six or seven feet of Mr. P.'s estimate, was detected in the Spencer Lake Mound (p. 39). It is doubtful if there is a prominent mound in the entire county that does not bear evidence of similar unrecorded pit excavations. Evidence of a similar pit was found in the Clam Lake Mound (p. 12). P. and his associate found "absolutely nothing" as a result of their digging. In that case someone else must have re-excavated their pit at a later date, as the fragmentary bones of disturbed burials were found by our workers scattered through the loose fill of this pit. Mr. P. states that they placed the horse cranium, minus the lower mandible, at the bottom of their pit. We were able to trace the walls of the loosely filled pit from top to bottom without difficulty. The contrast between the unpacked filler and the relatively compact remainder of the mound was clearly discernible even to one with no previous archaeological experience. We found no horse bones at the bottom or elsewhere in the fill of the pit. The horse skull that we found was in undisturbed soil, associated with an undisturbed burial, located approximately fifteen feet from the nearest wall of the pit excavation. The lower mandible was present tightly articulated with the cranium. The soil about the specimen, unlike the loosely packed material of the pit filler, was so compact that cleaning tools were required to remove it from the surfaces and depressions of the bones.

From a comparison of these conflicting data we can only conclude that we have under consideration two entirely different horse skulls, one of which may actually have been buried in some other mound. If it really was placed in the earlier pit excavation of the Spencer Lake Mound, some later pit digger, previous to our arrival on the scene, must have

removed it. It certainly was not in the filler of the central pit at the time of our investigation. In consideration of Mr. P.'s statement that they found absolutely nothing to reward their digging, whereas there were broken skeletal parts scattered through the filler of the pit in the Spencer Lake Mound, it seems highly probable that we are concerned here with two different mounds.

In any case, there remains no reasonable question as to the legitimacy of the horse skull that we found as a burial association placed in the mound by its builders.

July 12, 1962

APPENDIX B

A Burnett County Hoax

Mr. P.

In the summer of 1928, two high school boys, both of whom were Indian relic collectors, partially excavated a large conical mound located on the west shore of Spencer Lake in Burnett County, Wisconsin.

The boys dug a sizeable hole, consuming the better part of a hot afternoon, without encountering any kind of a recognizable feature. They were about to backfill the opening when one of them suggested that they bury a horse's skull that lay along the edge of a nearby field a short distance away. This seemed like a brilliant suggestion to the undisciplined minds of the boys, so the skull was retrieved and carefully laid in an oriented position at the bottom of the excavation before backfilling commenced. Anticipation of the probable results of this piece of mischief somehow eased the monotony of the backfilling, and the miscreants mutually agreed that in about two hundred years some archeologist would dig up the skull and conclude that he had found something really worthwhile.

The incident was forgotten until the year 1935 (1936?), when one of the boys, who was attending the University of Wisconsin, enrolled in a beginning anthropology course. Conversation with classmates soon revealed that several of them had been employed as field assistants on an archeolog-

ical project just prior to commencing the school term. It was learned that the summer project was under the joint supervision of Drs. Ralph Linton and W. C. McKern. Furthermore, they had investigated the Spencer Lake Mound, and a horses's skull had been recovered.

Prompted by rumors that Dr. Linton, head of the Anthropology Department, was preparing a paper on the horse skull, to be presented at an impending meeting of a professional society, and realizing that the world was rapidly closing in upon him, since the projected two-hundred years had suddenly kaleidoscoped into eleven, the student panicked and decided that honesty was the best policy in this particular instance. This was an easier decision to make than to implement, he found, especially after viewing Dr. Linton's red hair and imposing stature from a respectful distance. Finally, after about a week's postponement the student worked up sufficient courage to confront Dr. Linton with a full confession of having perpetrated a hoax. Much to his surprise he was received most kindly, and he can still remember the professor's parting remark, "Well, son, don't take it too hard. That's how I got my start, digging Indian mounds." It is quite doubtful whether the paper describing the horse's skull was ever finished. At least it has never appeared in print.

As I pen these lines in a reflective mood many years later, I cannot help but smile inwardly at the manner in which fortune turned the tables in this practical joke, and I must admit that it is one of my favorite stories. However, as a professional person with a deep and abiding interest in archeology, I am painfully aware that there is another facet to this incident that cannot be viewed so lightly. I am alluding here to the several references in the literature which mention finding a horse's skull in the Spencer Lake mound, and also to certain significant deductions related to the find. These occur in articles written by W. C. McKern in 1939 [1] and 1942, [2] and in several abstracts written by others since. [3] It appears from these publications that if Dr. McKern were ever notified of my confession he took little stock in it, or he may have assumed that the skull that was unearthed was not the same as the one that was planted.

Be that as it may, I had always thought, over the intervening years, that these statements were the unanswered finishing touches to the story. Little did I surmise that in 1963 the horse's skull would again rise from the grave to haunt me, and to plague Dr. McKern. Prompted by the impending publication of McKern's new monograph on the Clam River focus, Dr. Ritzenthaler of the Milwaukee Public Museum contacted me in an effort to clear up some of the confusion caused by my confession of the hoax. Thus the following is a sequel to the original story.

My initial responses to Dr. Ritzenthaler's detailed questionnaire contained several statements that seemed to conflict with known facts concerning the Spencer Lake Mound and surrounding area. This seemed to confuse the issue further, to the extent that my curiosity was aroused, and I made three trips to Spencer Lake in an effort to reconcile my faulty memory, which admittedly was not the best after the passing of thirty-five years. The last trip was made in the company of my original partner in crime, with whom I have maintained friendship over these many years. His memory of the details was much better than mine, as it had been fortified by several visits to the mound since 1928.

Standing at the actual site, we agreed that we probably dug into the mound on the side opposite the house, and somewhat toward the lake side of a large white pine snag that still stands today. We agreed that the hole was a large one, and was somewhat inclined toward the center of the excavation, but compromised at a figure of about six feet. These are the facts as best as we can remember them. Whether they sound convincing is not for us to say. We do feel, however, that we have put Dr. McKern to a lot of trouble which he didn't deserve, and we wish to take this opportunity to apologize to him.

May 20, 1964

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The Archeology of Eastern United States, Ed. James B. Griffin, pp. 122. (Author's Note: Bennett seems to mistakenly confuse the Spencer Lake mound with the Clam Lake mound.)

SOME GOOD IDEAS FROM THE DANISH ARCHAEOLOGISTS

A Review of some of the methods used at, **"The Muldjerg Dwelling"** excavated by J. Troels-Smith, The Natl. Museum, Denmark. (Reprinted from the Missouri Archaeological Society Newsletter, No. 176.)

Detective work at its finest would best describe the work being done by the Danish Archaeologist. The Danes have combined meticulous and thorough excavation procedures along with some Sherlock Holmes type deduction which can serve as an inspiration to anyone interested in archaeology.

A good example of Danish Archaeology is found in a condensed translation by the Smithsonian Institution entitled, **"The Muldjerg Dwelling Place: An Early Neolithic Archaeological Site in the Aamosen Bog, West-Zealand, Denmark"** by J. Troels-Smith.

If the excavation procedure of the reader is a little on the rusty side and perhaps the clues are not turning up very fast, or things are getting a little slow around the dig, a suggested tonic for such a situation would be to glance over the above publication. The Muldjerg report reads more like a detective mystery than a scientific report and shows what can be done with certain evidence which in many instances would be easily overlooked.

The Danes are experts when it comes to working with vegetal materials — twigs, seeds and pollen. Sites such as the Muldjerg Dwelling are located in peat bogs and offer an abundance of well preserved material of this type.

Pollen Analysis — The Scandinavians are especially famous for their work in pollen analysis, a method well described in the Muldjerg report. In case the reader is not familiar with this type of work a brief explanation is as follows:

The study of pollen can tell four things: (1) Type of plants; (2) Distribution of vegetation; (3) Relative age and (4) climate (Wormington, 1957, p. 9).

As hay fever sufferers well know the air at certain times of the year is filled with minute particles of pollen, the male reproductory agent of plants and trees. The pollen settles to the ground and if the conditions are right the tiny grains are preserved (in damp bogs and certain muds). In some cases they will be preserved for thousands of years. The archaeologist collects earth samples from each level of the excavation and then the samples are chemically treated. First they are cleaned with an acid solution, then a chemical is added to swell the grains for easier observation. A dye is then added to facilitate counting. Pollen counting is a very tedious job but gives an idea of the extent of vegetation covering.

The botonist can also match the pollen grains with their known plant species and determine the type of vegetation which flourished during the period of occupation. When the specie is known it is then compared to a master chart showing the years when certain types of vegetation were predominate. In this way an approximate time can be worked out for the cultural objects in the same level as the pollen sample. Needless to say it takes a lot of patient microscope work and a thorough knowledge of botany for this type of work. (See pp. 586-587).

By using pollen analysis, Carbon 14 dating, (measuring isotope disintegration), stratigraphy and comparison of cultural items the Danish Archaeologist can arrive at close dates of site occupation.

Twigs — To narrow the sites position in time the Danes can amazingly tell the exact months and seasons when the site was occupied. This bit of wizardry is accomplished in several ways. One method is to analyze the growth rings of small preserved twigs (cut by the ancients) and to compare them with similar present day cuttings. It was found that the twigs from the Muldjerg dwelling were cut the first part of June. (pp. 582-593).

NOTE: Archaeologist working in the Bluff-Dweller area of the Ozarks might profit by this particular method. There are some questions pertaining to the seasonal occupation of the bluff shelters which might be cleared up. The dry shelters

offer some good preserved vegetal remains (burned and non-burned) which might bear some close checking.

Berry seeds and nuts — The Danes also arrive at seasonal dates by examining berry seeds and nuts. Seeds from the wild raspberry and strawberry are found in the sites and since the maturing season of the berries is in July the month of occupation is fixed. Nuts and nut shells (maturing in September) were also found on the site (p. 54).

Place in time of the Muldjerg dwelling — By using pollen analysis, Carbon 14 dating, growth ring analysis and seed analysis the Muldjerg dwelling was placed in time as follows: Last part of the **oak-forrest period,** approximately 2830 B. C. The site was occupied for a single summer from the first of **June through September** — (p. 594-597).

Stratigraphy — Another interesting aspect of Danish archaeology is the method utilized in outlining difficult stratigraphy on the vertical profiles. Vertical lines are drawn at specific intervals and a match stick is placed where the level crosses a vertical line. In this manner the levels are not lost and can easily be drawn in on a grid (p. 580-581).

The Danes of course are working primarily in pure peat deposits and it would be hard to find a comparison in America. Just the same, however, the archaeological detective work of the Scandinavians has to be admired and their techniques are well worth studying.

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PIPES AND POTTERY OF THE DuBAY SITE

Thomas S. Abler

I. Introduction

In 1942 the **Wisconsin Magazine of History** carried news of an archeological site then being dug. "The former home and fur trade post of John B. DuBay in Portage County on the Wisconsin River, just south of the Marathon County line, was located in November by Professor Philleo Nash of the University of Wisconsin whose home is at Wisconsin Rapids. A careful archeological description of this post, known to have been opened by DuBay's father in 1790, is being prepared before the site is covered by water from the dam." (Kellogg, 1942:375)

The material from the DuBay site was deposited at the Milwaukee Public Museum, where it remained untouched for some 21 years. The material in the site is extensive in quantity — I counted 673 very rusty nails, which I would estimate to be less than half the number in the site, before I gave this up as a rather useless, time consuming task. The material ranges from stone arrow points (triangular) to metal cartridges (both rim and center fire). Unfortunately, Dr. Nash's field notes were not available to me, so it was next to impossible to make sense from the jumble of material with which I was confronted.

Because of the confused nature of the site, and the limited time of this author, it was decided to concentrate on the pipes and pottery in the site.

II. DuBay, the trader and the post

It is usually said that DuBay was born at Green Bay around 1810 of mixed ancestry. His father was of French

descent, born in Montreal. He claimed Chippewa or Menominee blood through his mother depending on which tribe at the time was getting a payment from the government. He traveled widely in Michigan and Wisconsin as a trader. At the time he set up his post on the Wisconsin River he was an agent for the American Fur Company.

The date of the establishment of this post is obscure. DuBay's father, Louis DuBay, claimed to have spent a single season there, the winter of 1790. Frederick Jackson Turner stated that it was established before 1835 (Turner, 1889:97), but Krug, the biographer of DuBay, does not offer any evidence to support this early date. He states that it is generally supposed to have been established at a later date.

In any case, "DuBay himself, now launching upon his conspicuous pioneering exploits, was too busy to attend to his posts except in a supervisory capacity, and did not establish family residence at DuBay Point until, it is believed, about 1846." (Krug, 1946:22-23)

The area was inhabited by what was called the Wisconsin River Band of the Chippewa. They clustered in a village around the trading post. On September 3, 1836 the Menominee took advantage of this group and sold their land out from under the Chippewa. Needless to say, the Chippewa protested this unauthorized sale of their lands, and also needless to say, the whites paid little attention to these protests.

In the 1840's this post was looked on as an outpost of civilization in the wilderness. Its name appears in various forms, according to Krug. These include DuBay Point, DuBay Trading Post, DuBaie, and DuBois.

Other whites settled near the post, and Krug quotes a census of 1842 as listing 14 males and five females at the site. Lumbering was good in the region, and the population rose to 119 males and 37 females in 1947.

This was near the end of the fur trade period in Wisconsin, and DuBay spent his time lumbering as well as trading. This is how he spent the winter of 1848-1849 after acting as interpreter for Col. Wm. Medill at the treaty of Lake Poygan in October, 1848.

DuBay's activities after this winter are hazy, but he must

have abandoned the post within the next few years. Krug quotes a narrative from the Stevens Point **Wisconsin Pinery** of August 17, 1853. "I must not neglect to mention DuBay's, which was formerly, and may be yet for aught I know, an Indian trading village, but evidently fast going into decay." (Krug, 1946:80-81)

DuBay seems to have returned to Fort Winnebago. Here, some years later, he was defendant in a famous murder trial, involving many figures prominent in Wisconsin legal history.

After the trial, or rather trials, the **Dictionary of Wisconsin Biography** states, "DuBay retired to a trading post north of Stevens Point, where he lived in obscurity until his death." (1960:109) He died on January 11, 1887. **The History of Northern Wisconsin** (1881:746) lists DuBay among the "Illustrious Dead," but in the body of his biography speaks of the DuBay trading post "where John B. still lives."

Thus this trading post seems to have had two occupations, one in the 1840's and a second from 1857-1887.

III. Pottery

The DuBay site is well stocked with broken pots, plates, cups, saucers, jugs, etc. I counted 2,240 pieces of ceramic material. Three of these seem to be Indian potsherds. The rest are of white origin. I think this is to be expected due to the late occupation of the site.

I very arbitrarily divided the potsherds into "fine" and "rough" ware. Any piece that had a white finish I classed as fine. Generally, the rough ware is heavier, with a coarser finish than the fine ware. It is also usually dark in color. If a piece seemed to be the type of ware I thought I would eat off of, I classed it as fine. I have some reservations about this divisions, but on the whole I think it is a valid one. The 2,234 sherds that were left after eliminating the three Indian sherds and three sherds that were so affected by mineral deposits that I was unwilling to classify them are broken down into 1,148 fine sherds and 1,086 rough ones.

Several pieces of fine ware bore trade marks of English firms which I was able to trace. One of these is the plate illustrated in Fig. 1. This was found in Pit 2. It bears the letters "rnival & Son," "obridge," and "fordshire." I am

FIG. 1

FIG. 2

FIG. 3

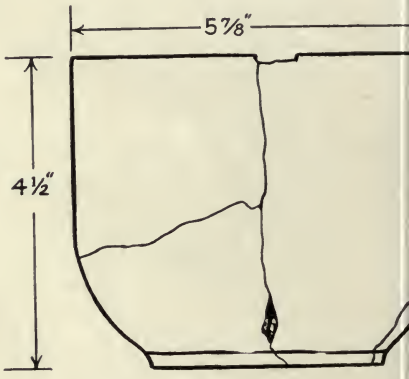


FIG. 4

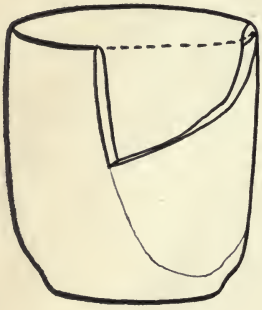


FIG. 5

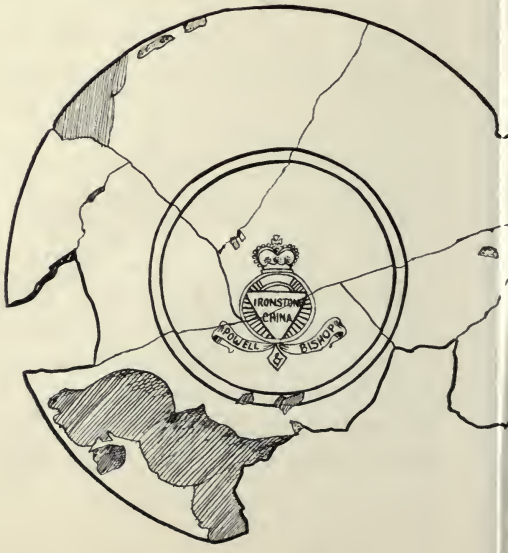


FIG. 7

certain that this is the product of T. Furnival & Sons. The other two words are undoubtedly Cobridge and Staffordshire. Jewitt, writing in 1878, states that the firm had been in operation for about thirty years. "This firm . . . ranks high as manufacturers of white granite and vitrified ironstone, and decorated toilet wares, for the United States and Canadian markets, to which they ship large quantities of goods." (Jewitt, 1878:II:293)

From this same pit comes the large bowl pictured in Fig. 2. The trade mark on this piece is shown in Fig. 3. Pankhurst & Co. were owners of the Charles Street Works. This Hanley works had been operating for about 100 years when Jewitt wrote, and Pankhurst was the sixth owner of the firm. "The goods produced by this firm are confined to white granite for the American markets." (Jewitt, 1878:II:339)

Pit 2 yielded a number of large fragments of plates, bowls, and cups, such as those in the first two illustrations, which were easy to piece back together. A third piece from this site which I have reconstructed is drawn in Fig. 4. Also from Pit 2 is a second bowl, similar in shape to this one, but smaller. It is about 5½ inches in diameter and 3½ inches high.

The cup shown in Fig. 5 was accompanied by two others. A total of 31 pieces of broken fine ware was found in Pit 2. All of these pieces were of good size. In addition, two large pieces of brown rough ware were present in this pit.

The reddish brown trade mark illustrated in Fig. 6 belongs to the Cobridge Works. These were established in 1836 as Harding & Cockson. "In 1866 the making of china was discontinued and the manufacture of white granite ware, for the American trade, substituted. The mark is the Royal Arms and the name 'IMPERIAL IRONSTONE CHINA, COCKSON & CHETWYND,' or 'COCKSON & SEDDON.'" (Jewitt, 1878:II:296).

Another small sherd, also with reddish brown lettering, was found in a surface dump. The lettering was "COCK."

The plate pictured in Fig. 7 was scattered in the site. The bottom portion, stained blue, was found in square 8B. The upper portion, which remained its original white, was found in square 9A.

FIG. 8

FIG. 9

FIG. 10

FIG. 11

FIG. 12

FIG. 13

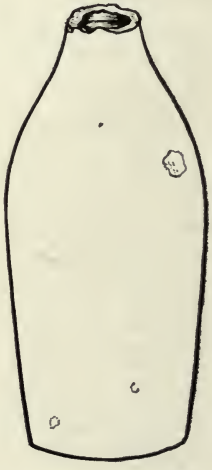


FIG. 14

FIG. 15

FIG. 16

I am certain that this piece was not produced until after 1865. The firm of Powell & Bishop did not exist before that date. White granite ware for Americans and Canadians was produced at Powell & Bishop's Church Works.

I am not at all certain about the trade mark shown in Fig. 8. Unlike the others, which have been painted on, this was impressed into the pottery. It could refer to Clementson who owned the Phoenix and Bell works. In 1878 these were worked by "Messrs, Clemenston Brothers, who make largely the white granite and common painted ware for America and Canada." (Jewitt, 1878:II:332) The piece could be earlier, as the firm soon fell to the sole ownership of Joseph Clementson after it was started in 1836 as Reed and Clementson. In 1865 Joseph Clementson retired, leaving the business to his four sons.

Even more troublesome is the registry mark shown in Fig. 9. It too is impressed in the sherd, and the glaze obscures the lettering. I can not detect any letter after the "T" in "Clement." I also could not find any "Clement" in the index of Jewitt's book. Perhaps it is the work of J. Clementson, but I would not feel certain about it. The lettering is further obscured by cracks in the plate. It is datable, however. The "L" at the top shows it was produced in 1856. The "A" on the left indicates it was produced in December of that year.

One plate had the following impression:

IRONSTONE

J. WEDGEWOOD

CHINA

I did not locate any information that would date it, though.

A set of toy cups and saucers was found at the site, in very good condition. Five saucers and three cups were found. Two are illustrated in Fig. 10. Also found was a doll, sketched in Fig. 11.

I suspect that much of the rough ware held "fire-water" when it was whole. Fig. 12 illustrates the top portion of a jug. This was found at the bottom of a storage pit. Fig. 13 is an attempt at reconstructing a pot, its shape strongly suggesting a jug to hold "Kickapoo-joy-juice." There are many

FIG. 17

FIG. 18

FIG. 19

FIG. 20

FIG. 21

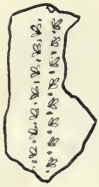


FIG. 22

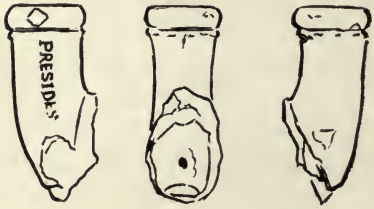


FIG. 23

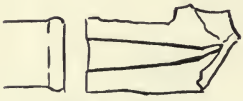


FIG. 24

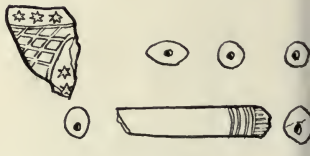


FIG. 25

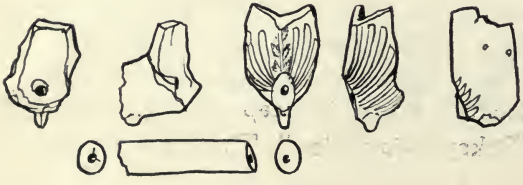


FIG. 26

FIG. 27

handles that could have come from such jugs in the rough ware.

A ceramic bottle, **sans** neck, is sketched in Fig. 14.

The fine ware was predominantly white, with blue being the color used most often for decoration. Occasionally, an ornate piece would be found, such as a figure in a tricorne hat, but mostly the ware seemed intended for dinner service. The rough ware was predominantly brown and black, with a grey or buff exterior and a dark brown interior being quite common. At times crude blue decorations were placed on the grey surface. One form that was fairly common was made of red clay, with an orange glazed surface. This type did not hold up very well, and in almost all cases the orange surface has flaked off.

After looking at the pottery in the DuBay site, I would conclude that a good portion of it came from the later occupation of the site. It is possible that a great deal of the material is earlier, and simply has no trade marks by which it could be dated, but I doubt it.

IV. Pipes

Among the materials from the DuBay site are found 49 pipe fragments. This includes 23 stem fragments and 26 bowl fragments. All are highly fragile clay pipes, all of white clay, and many are very interestingly decorated.

I attempted with no success to trace these pipes to specific pipe makers. The literature on clay pipes that I was able to find concentrated on earlier pipe makers.

The pipes arranged according to level in the sites are as follows:

	Bowls	Stems	Total
Surface	4	7	11
Level 1	6	3	9
Level 2	0	2	2
Cellar	2	1	3
Pit	0	1	1
Untagged	14	9	23

Of the untagged specimens, 12 bowl fragments and two stem fragments are tagged for a specific square in the site, but lack any information about whether they come from level 1 or level 2.

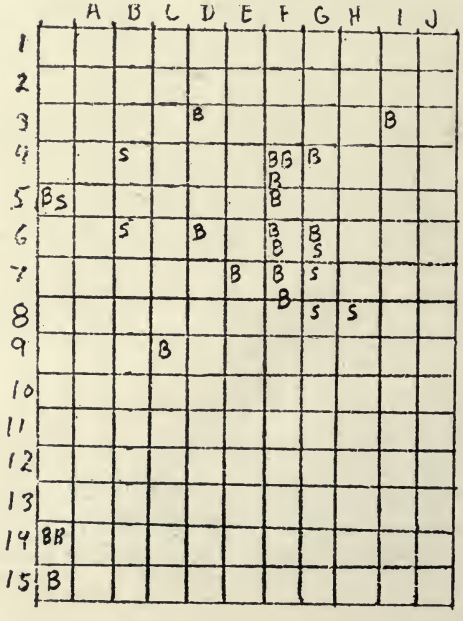
I have no idea whether level 1 or level 2 is closer to the surface. Because of rather important points like this I doubt if much could be done with the material at the site until the field notes are available.

I have assumed that Dr. Nash worked on a grid system. I have diagramed how these fragments lie in this grid, when the square from which it came was found with the specimen. "S" stands for a stem fragment, while "B" indicates that a bowl fragment was found in that square. Unfortunately, I have no idea what other features in the site this distribution might be connected with.

The pipe specimens themselves are quite interesting. All are white in color. Perhaps the most unusual is found in Fig. 15. This is a very finely done human face, complete with mustache. This handsome gentleman was found in square 4F.

More conventional is the specimen shown in Fig. 16. The British origins of this pipe are readily apparent from its decoration. The "spur" at the bottom marks this as a nineteenth century pipe. This pipe comes from square 3D.

Even more plain, in fact completely lacking in decoration,



is the pipe represented in Fig. 17. Because with most fragments it is impossible to rule out decoration on the pipe, even if that particular fragment is blank, it is impossible to judge what percentage of pipes are decorated and what percentage are not. A little better than half of the bowl fragments lack decoration. Some bowl fragments, as in Fig. 19, lack decoration on the bowl itself, but are decorated on the stem attached to the bowl.

The plain pipe in Fig. 17 was found in level 1 at square 7E.

To me one of the most attractive pipes was a small fragment, also from level 1. It was located in square 7F and is illustrated in Fig. 18. Its decoration is unique.

I have already mentioned the pipe in Fig. 19, found in level 1, square 9C. Another unusual feature of this pipe is its lack of a spur.

Figures 20 and 21 illustrate two specimens from the cellar floor. The stem fragment is particularly interesting. The name it bears, Peter Dorni, is in all likelihood its maker.

Also found in the cellar, in square 6D, was the bowl fragment illustrated in Fig. 22. Its delicate leaf pattern is very pleasing.

Two unusual pipes are found in Figures 23 and 24. The former was found in square 4G. Its bowl is at the bottom of the illustration, and the major part of the fragment is the stem. A wooden or reed stem must have been inserted in this. The pipe from Fig. 24 appears to be of the same style. I did not run across any pipes of this type as I was looking through the literature.

Interesting pipes from the surface are illustrated in Figures 25 and 26.

In square 6F, level 1, the "TD" pipe illustrated in Fig. 27 was found. "TD" pipes have been found on sites dating from 1700 to 1850, and are thought to have been manufactured by several different men. One like this was found on Mackinac Island (Petersen, 1963;6). The fragment illustrated in Fig. 25A matches the decoration on another "TD" pipe found on Mackinac Island (Petersen 1963:6). Petersen (p. 7) estimates that the Mackinac pipes come from the early

nineteenth century, "possibly from the War of 1812 period." In light of the known occupation of the DuBay site, this estimate is probably too early.

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THE RECENT AZTALAN DATE

William M. Hurley

In the September, 1963, issue of **The Wisconsin Archeologist** (Vol. 44, No. 3, p. 180) we are informed of another radiocarbon date for Aztalan. The sample was of charcoal from a refuse pit (Pit 10) that was excavated in 1959. The area excavated was in Section IV (Barrett, 1933, plat IV), under the field directorship of Dr. Chandler Rowe, Lawrence College. The University of Michigan Memorial - Phoenix Project, under the direction of H. R. Crane, reported a date of 580 + — 100 B. P. (M-1214) or 1283 A. D. to 1483 A. D. (Ritzenthaler, 1963, p. 180).

On August 11, 1959, Dr. Stephan F. Borhegyi and the writer were stripping off the plow zone, in Section IV, in order to trace a prehistoric wall trench that extended to the east in square 113-L-3. This wall trench was 15 cm. wide and 20 cm. deep. In the center of the square it cut through and superimposed a large refuse pit (Pit 10) which yielded the charcoal sample (M-1214). Pit 10 was cut in half by this trench. The surface dimensions of Pit 10 were: 53 cm., east-west, and 67 cm., north-south. After the trench was excavated it was decided to arbitrarily divide the refuse pit into

Pit 10 — Level Z (10 cm. to 20 cm. below plow zone.)

10 cm. levels and to separate the material according to these levels. Ceramic materials of Middle Mississippi and Woodland varieties were found mixed throughout all levels and no count was made of their number or type according to levels. After excavation this bottle-shaped refuse pit was found to be 27 cm. deep with 7 cm. of "undisturbed" material below the bottom of the wall trench. The lower level (level 3) was further subdivided into three levels. Two questions concerning this date should be answered. What were the contents of this refuse pit? and, How significant is this date?

The contents of Pit 10 are as follows:

1. **Level 1** (0.0 to 10 cm. below plow zone)
   1 Fired rock of dolomite 9 cm. wide, 12 cm. high, and 8 cm. deep.
   1 Fired rock of quartzite 11 cm. wide, 4.5 cm. high, and 7 cm. deep.
   1 Fired rock of gabbro 11 cm. wide, 2.5 cm. high, and 16 cm. deep.
   1 Deer tarsus
   1 Mammal vertebrae
   1 Mammal rib
   1 Mammal long bone
   2 Burned bone fragments
   2 Shell fragments of **Elliptio dilatatus and Strophitus rugosus.**
   1 Worked chert fragment
2. **Level 2** (10 cm. to 20 cm. below plow zone)
   1 Fish vertebrae
   Carbonized materials (corn kernels or beans)
   Charcoal fragments
   Fish scales
   1 Bone bead of a fish vertebrae 8 mm. in diameter, 3 mm. high with a perforation through the center that is 4 mm. in diameter.
3. **Level 3** (20 cm. to 27 cm. below plow zone); levels a, b, and c.
   Level 3a (20 cm. to 22 cm. below plow zone)
   30 Assorted non-human bone fragments
   Carbonized bone
   1 Shell of **Elliptio dilatatus**
   Pebbles of dolomite, chert, quartzite, sandstone, limonite, granite, and diorite.
   Level 3b (22 cm. to 24 cm. below plow zone)
   2 Shells of **Amblema costata**
   Carbonized wood
   1 Fish maxillary
   1 Deer rib
   1 Metacarpal digit
   1 Mammal rib fragment
   9 Assorted non-human bone fragments
   Pebbles of chert and quartz
   Level 3c (24 cm. to 27 cm. below plow zone)
   1 Mammal vertebrae
   1 Mammal mandible
   5 Assorted non-human bone fragments
   Shell fragments

Carbonized wood and corn
Siltstone stained with limonite, rhyolite, and amygdaloidal with quartz
Charcoal (radiocarbon sample M-12144)

In December, 1959, Paul W. Parmalee of the Illinois State Museum, identified the following shell and bone refuse recovered from Pit 10:

SHELL	
Amblema costata, Three-ridge	2
Elliptio dilatatus, Spike	2
Strophitus rugosus, Squaw Foot	1
BONE	
Whitetail Deer, **Odocoileus virginianus**	4
Ring-necked Duck, **Aythya collaris**, and/or Lesser Scaup, **A. affinis**	5
Duck, sp.	2
Bullhead, **Ictalurus** sp.	2
Sucker, **Catostomus** cf. **commersonnii**	2
Pike, **Esox** sp.	1
Sucker sp	1
Misc. unidentifiable bone fragments	22
Unidentifiable fish bone fragments	12
Unidentifiable bird bone fragments	12

Fourteen grit tempered cord roughened Woodland pottery fragments were recovered from Pit 10. These sherds were mixed with twenty-six tempered Middle Mississippian sherds. Nineteen of these Mississippian sherds were used in the restoration of a large Ramey Incised vessel (Hurley, 1960, p. 103) that is similar to Barrett's Form 18 (Barrett, 1933, pl. 97, no. 18, p. 597). The angular shoulder of the vessel had broad grooves in a series of concentric semicircles; closest to Barrett's design No. 10 (**Ibid.**, pl. 92, no. 10, p. 587). The restored composite silhouette round bottomed Ramey Incised vessel measured: 28.6 cm. high, 52 cm. maximum width, with an orifice 35.2 cm. in diameter.

Thus, this radiocarbon sample (M-1214) is dating a refuse pit that was superimposed by a wall trench. The pit contained a variety of shell, bone, and lithic refuse that was intermixed with Woodland and Mississippian pottery. The carbon sample (M-1214) was well below the wall trench (4 to 7 cm, below) and therefore undisturbed.

Pit 10 was less than 75 yards south from the charcoal sample (M-1037) submitted in 1959 by Chandler Rowe. This

sample yielded a date of 1200 + − 150 B. P. or 610 A. D. to 910 A. D. (Ritzenthaler, 1961, p. 139). Charcoal from the northwest pyramidal mound yielded a date of 320 + − 200 B. P. (M-642) or 1440 A. D. to 1840 A. D. (Ritzenthaler, 1960, p. 68). For the Cahokia area, Fowler (1963, p. 57) states: "Taken altogether, these radiocarbon determinations [25 in all] suggest that the Mississippian occupation of the American Bottoms region began about 800 A. D. . . . the data indicate a very late Mississippian occupation of the area, lasting into the 16th century. . . ." Charred wood from House 2, area 15A at Cahokia, dates Ramey Incised pottery − the same as Pit 10's − at 805 + − 100 B. P. (M-1337) or 1055 A. D. to 1255 A. D. (Ibid., p. 53).

The upper range of the Aztalan sample M-1037, the full range of Pit 10's sample (M-1214), and the bottom range of Aztalan sample M-642 would be as follows: 910 A. D. − 1283 to 1483 − 1440 A. D. or well within the dates for the Misisssippian occupation of the American Bottoms. Therefore, we could accept all three of Aztalan's dates and be in accord with Cahokia's Mississippian occupation. What is now needed are radiocarbon samples from house structures or the stockade line to make Aztalan's dates more significant.

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os us add to our knowledge of human ry.

A Pothunter

The POTHUNTER digs to gain possession o THINGS.

He keeps site locations a big secret and save only the whole arrowheads and pretty arti facts he can show off.

The POTHUNTER keeps no records. . . .

By digging through sites without supervision . .

By being secretive about site locations . . .

By keeping no records . . .

the POTHUNTER so DESTROYS the RECORD that whole chapters in the story of archeology are lost forever.

PORTAGE MOUND GROUP

By Paul Koeppler

Two panther effigies and a single conical mound were located and measured July 6th, 1963 by Paul Koeppler, Neil Ostberg, and Thomas Jackland. This group of mounds is located about 4 miles south of Portage in the eastern half of section 28, Pacific Township, Columbia Co. They are situated on the edge of a high ridge (800 foot elevation) which is bounded by the Duck Creek some 700 feet to the north and by a swamp, with the Wisconsin River a distance of about ¼ mile west through this swamp.

Panther mound No. 1 is 240' long but because the tail extends to the edge of the ridge, and shows signs of erosion along this side, it is possible the tail may have been somewhat longer. Panther No. 2 is 130' long and it situated 51' and somewhat in line with the tail of panther No. 1. The conical mound measures 13 x 18 and is located 3' above the back of panther No. 2.

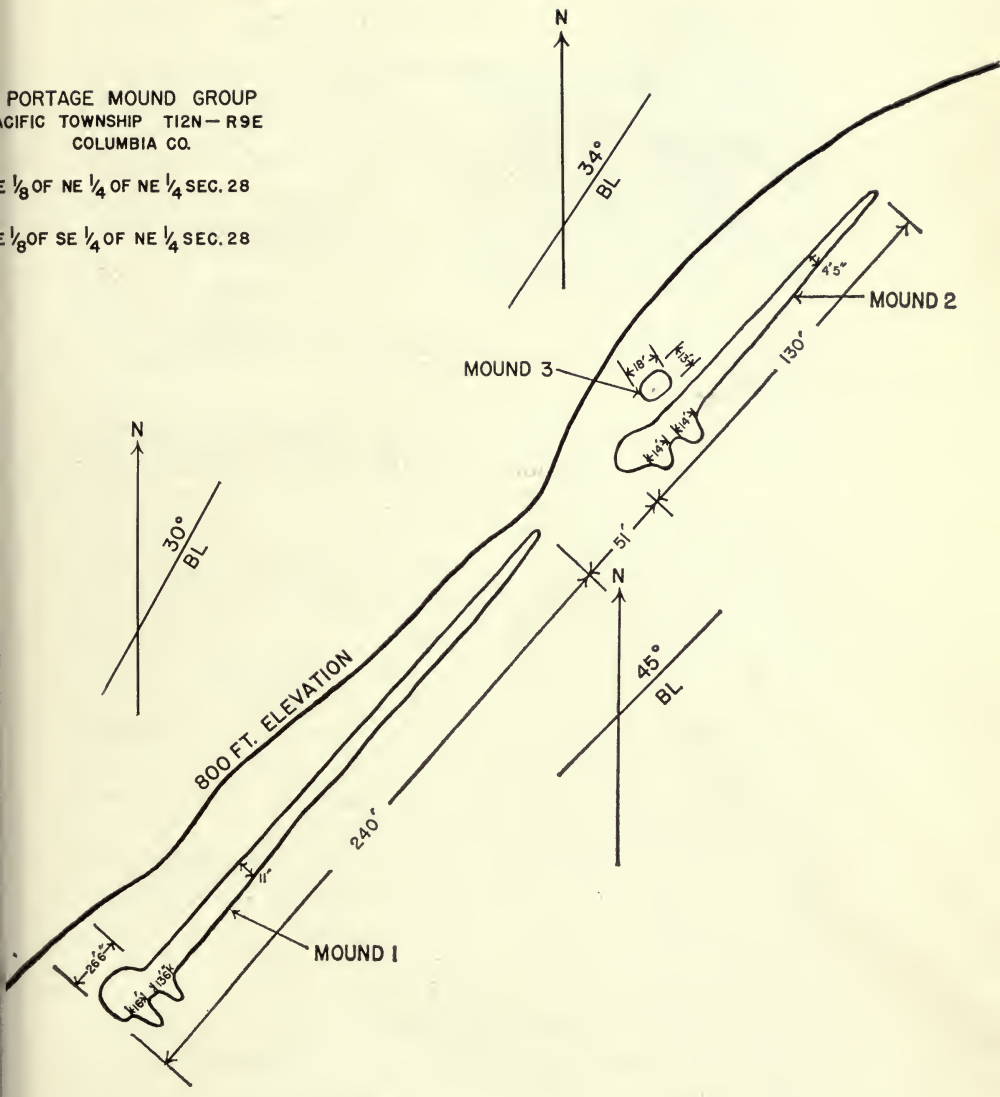
All three mounds have been marred by early relic hunters.

On all the high ground for a mile south and ¾ mile east there are numerous sand blows. In checking these blows it was noted that every one contained small flint chips, cracked fire rock, and a few pieces of worked native copper.

PORTAGE MOUND GROUP
ACIFIC TOWNSHIP T12N — R9E
COLUMBIA CO.

E 1/8 OF NE 1/4 OF NE 1/4 SEC. 28

E 1/8 OF SE 1/4 OF NE 1/4 SEC. 28



THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

JENNINGS, JESSE D. AND EDWARD NORBECK, EDITORS

1964 **Prehistoric Man in the New World.** Published for William Marsh Rice University by the University of Chicago Press, Chicago.

633 pages; price: $10.00.

Table of Contents and Contributors to this Volume:

Introduction — Jennings and Norbeck
Geoanthropology — Carey Croneis
Early Man in the New World — Alex D. Krieger
The Arctic and Subarctic — Henry B. Collins
The Western Coast of North America — Robert F. Heizer
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The Southeastern United States — William H. Sears
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Index

This is a most impressive book, which summarizes current professional knowledge of the archaeology of North, Central,

and South America. It resulted from a symposium in 1962 at Rice University in observation of the fiftieth year of that institution. A distinguished roster of scholars was assembled for this occasion and each paper was an original contribution by a foremost authority for the various regions or subjects selected. These authors were asked to write a general paper covering both factual and theoretical aspects of their assigned topics, expressed in non-technical language. This project was to be directed toward an "educated lay audience."

In this day of increased specialization and rapid accumulation of knowledge it is difficult even for the professional archaeologist to keep up with progress in related areas. Therefore, this volume will be a welcome reference work to professionals, students, amateurs, and laymen alike. An incredible amount of information is included, and the non-professional should be warned that it is not always easy reading. It is, however, a valuable book to possess as a handy encyclopedic summation of the length, breadth, and depth of New World archaeology. Maps, chronological charts, and line drawings supplement the text.

A book as comprehensive as this could not have been assembled as recently as ten years ago. Sufficient radiocarbon dates are available today to permit tentative correlation of archaeological sequences between distant regions, though it is still difficult to correlate the regional histories of whole continents. In the concluding papers will be found stimulating discussions of inter-continental contacts, as well as possible extra-continental diffusion of people and ideas.

Individual papers differ greatly as to the degree of detail or the level of generalization, due to the unevenness of past research interests. For example, the prehistory of South America, with the exception of the Central Andes, has attracted only a handful of investigators, so our knowledge of most of that continent is still extremely vague.

Obviously it is too soon for the definitive summary of New World prehistory. Though it would be desirable in a book of this kind for each author to give equal attention to alternative hypotheses to explain controversial or incomplete data and to outline the consensus of professional opinion, it is dif-

ficult for the specialist to limit himself to such an editorial plane. The non-professional reader therefore should be advised that some scholars have made synthesizing interpretations in this volume which reflect their own mature assessments of their area, rather than reflecting the opinion of the majority of workers in the area. The authors of this volume are eminently qualified to make original syntheses, but the general reader should know that other authorities have made, and will continue to make, divergent interpretations of the same data. This sort of flexibility of interpretation makes for some of the excitement of reconstructing history. Be that as it may, a general statement in a complex subject is always stimulating; the professionals want to know what their colleagues are currently thinking, and the more general audience wants to have a reliable source of concise information.

This review will not attempt to condense the content of this extensive book nor comment on individual papers. Suffice it to repeat that it is rare to find between two covers so authoritative a compendium of up-to-date material on such a diverse field as New World archaeology.

— Lee A. Parsons

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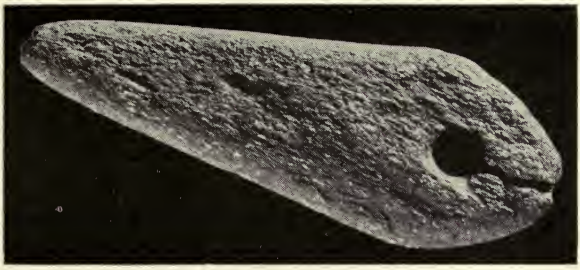
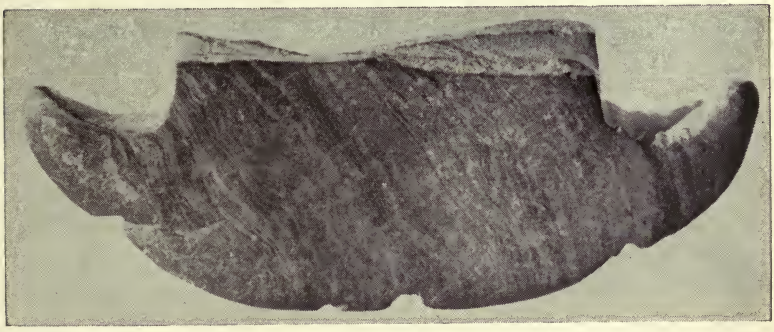
Interesting Wisconsin Specimens



Net weight ?, of limonite with hole and groove. Surface find by Tom Jackland in Section 22, Portland Township, Dodge County. Length 3¾ inches.



Half of notched-ovate type of bannerstone. Banded slate. Length 5 inches. Sheet copper pendant (?). Greatest width: 1 - 5/16 inches. Notching along curved edge appears to be of more recent origin.

Both specimens were found by Neil Ostburg one mile north of Hubbleton, Dodge County, Wis.

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(New Series)

THE WISCONSIN ARCHEOLOGIST

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THE MORROW SITE: A RED OCHER WORKSHOP SITE IN THE KANKAKEE VALLEY, INDIANA

Charles H. Faulkner

Since the initial identification of a Late Archaic - Early Woodland Red Ocher manifestation in northern Indiana (Faulkner, 1960), several new components have been discovered in this area. Like the situation in the Illinois Valley, these components are burials endowed with diagnostic Red Ocher artifacts such as "turkey-tail" blades, and especially large caches of ovate-trianguloid cache blades. Unfortunately, none of these sites has received professional attention like the Morse site in Fulton County, Illinois (Morse, 1958, 1959; Morse and Morse, 1964), and the information about them has been compiled from artifacts recovered by accident.

Even though the Kankakee Valley manifestation has remained ill-defined as compared to its Illinois Valley counterpart, workers in both areas are beset with the same problem when interpretations of these manifestations are attempted. The problem is that no definite Red Ocher habitation sites have been discovered in either area. This apparent absence is not due to the fact that these sites do not exist, but as Morse and Morse (1964, pp. 80-81) so ably conclude . . . . "while Late Archaic artifacts, presumably including Red Ocher types, are seemingly scattered almost everywhere, there is no real concentration at any one spot. Added to this is the observation that artifact types found associated with Red Ocher skeletons do not seem to be duplicated in habitation sites." Although it seems a certainty that the Red Ocher people would not lose much exotic burial furniture on their habitation sites, it seems probable that remains of the manufacture of non-trade items might be found on their living or workshop sites.

The most common artifacts found with Kankakee Valley Red Ocher burials and in seemingly isolated caches are the ovate-trianguloid cache blades, called Pomranky Points in Michigan (Binford, 1963, p. 166). Besides their abundance, the real salient feature of these blades is that they are invariably made from the same type of lithic material, this being a cream-white to light grey chert which is sometimes slightly fossiliferous. Actually, several different chert sources might have been utilized as in Michigan where several chert types are represented (Binford, 1963, pp. 155-57). If these blades were manufactured locally as they were in Michigan on the Eastport site (Binford and Papworth, 1963), there would be

FIG. 1. Cache blades in various stages of manufacture from the Morrow workshop. Top row, cache blade blanks; middle row, roughly chipped and crude blades; bottom row, finished ovate-trianguloid cache blades.

a good possibility that Kankakee Valley Red Ocher workshop sites would produce flint chipping debris such as flakes, blade rejects, and even finished blades of this distinctive chert. The recently discovered Morrow site in Section 35, T33N, R8W, Lake County, Indiana, seems to be a site of this kind.

The Morrow site is the highest of a series of sand knolls protruding above the low Kankakee bottomland and lying approximately 2,000 feet south of the high bank on the edge of the bottomland. This site, designated La-82 in the Indiana Historical Society survey, was brought to the attention of the writer by several collectors who periodically visit the site. Their surface collections contain numbers of whole and broken cache blades, ranging from well-finished artifacts to blade blanks and rejects. A survey of the site produced seven unfinished or rejected blades, eight broken cache blade bases, and three broken points. There are also cores, worked flake blanks and rejects (see Figure 1), waste flakes, and chert nodule fragments. More importantly, the survey revealed the northeast side of the knoll is covered with flakes and spalls of whitish-grey cache blade chert. Most of the finished cache blades have been found in this area.

A number of projectile points have been picked up here, but few are made from cache blade chert. The majority are small to medium sized (3cm.-5cm.) stemmed and notched types made from various colored chert pebbles probably found in the glacial drift (Figure 2, A-B). Other lithic artifacts recovered by the survey and collectors include notched scrapers (Fig. 2, C), notched and straight-shank drills (Fig. 2, D), small ovate knives (Fig. 2, E), miscellaneous scrapers, hammerstones, and a grooved banded slate weight (Fig. 2, G). A grooved hammerstone (?) and a crude plummet were also reported found on the site.

In addition to the evidence for cache blade manufacture on the site, two other observations are noteworthy here. Unlike other knolls within a radius of a few miles where Middle and Late Woodland pottery sherds are quite abundant, the Morrow site produces very little pottery. Besides a few tiny fragments, only one identifiable sherd has been recovered, this being a sherd of Marion Thick (Figure 2, H). This adds to

the evidence that we are dealing with a Late Archaic or Early Woodland site.

The other knolls in the immediate vicinity also seem early since little pottery has been found on them and one has produced a reworked birdstone and a grooved bannerstone. There have also been a number of broken gorgets collected on these sites. An interesting topographic feature of all of these knolls is their location in the Kankakee marshland. All of them are between 640 and 655 feet above sea level which means that before the swampland was drained, some of them barely protruded above the water during times of inundation. An interesting observation in this respect is that most of the

FIG. 2. Lithic artifacts found on the Morrow site. A-B, stemmed and notched projectile points; C, notched scrapers; D, notched and straight shank drills; E, ovate knives; F, chipped slate point; G, grooved slate weight; H, Marion Thick sherd.

late prehistoric Upper Mississippi sites in the bottomlands are on knolls and ridges 650 to 660 feet above sea level. This could mean either the later peoples were utilizing different food resources in the marsh, or had to live on higher ground due to wetter conditions. If the latter reason is valid, warmer and drier periods in Late Archaic - Early Woodland and Middle Woodland times could have made the lower knolls more suitable for habitation at those times.

The Morrow site could hold a number of answers in the study of the Red Ocher occupation in the Illinois and Kankakee Valleys. The location of the site in the marshland could indicate a preference due to food resources or climatic conditions during the time of occupation. A systematic analysis of the workshop debris would reveal how the cache blades were made in the upper Illinois Valley, and their relationships to the Michigan types. Since only a portion of the knoll seems to be a workshop, the remainder of the site could produce features such as pits or even house patterns if the Red Ocher people also lived on this site for any length of time. Concerning the latter possibilities, the landowner, Mr. Neil Morrow, reported that dark "charcoal pits" could be seen on one side of the hill. A crop of corn prevented the verification of these features, which illustrates the frailty of a mere surface survey. Nevertheless, a surface survey of this nature can suggest the potentiality of a site, and the Morrow site is potentially informative in the future study of the Red Ocher Culture.

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A PERFORATED SHARK TOOTH FROM THE OGDEN-FETTIE SITE *, FULTON COUNTY, ILLINOIS

L. A. Conrad

During March of 1959, Mr. Dick Morgan found a perforated shark tooth on the plowed surface of mound F° 177 on the Ogden-Fettie type site. The tooth, which was identified by Dr. Parmalee of the Illinois State Museum as, ". . . apparently from the white shark, Carcharodon Carcharias" [1], measured 4 cm. (1.5 inches) in length and 3.1 cm. (1.3 inches) in width. This shark which reaches a length of forty feet inhabits all warm oceans. The only modification of the specimen, an eliptical perforation, was made by two overlapping drillings from the same side of the softer base. A few abrasions were also on the base.

To the author's knowledge this is the second and northernmost case of the appearance of shark teeth in Havana sites. The other appearance was in Mound Two of the Baehr Group in Brown County, Illinois, excavated by Dr. John F. Snyder in 1894. Dr. Snyder's report did not specify whether or not these perforated teeth were fossilized and the specimens have since been lost The only reference he makes to these teeth is: "With these (Marginella beads) . . . (were) four small shark's teeth, triangular with serrated edges, and also pierced at the base to be worn as beads." [2]

Though the principle occupation of the Ogden-Fettie Site was during Middle Hopewell times, it should be noted there was a lighter Mississippi occupation several centuries later.

The Mississippians used shark teeth in Illinois more frequently than the Hopewellians. These teeth are not uncommon in the Cahokia region. Among these people shark teeth were employed not only as ornaments but also as settings for clubs. To the author's knowledge no shark teeth have been reported in Mississippian sites north of the Cahokia area.

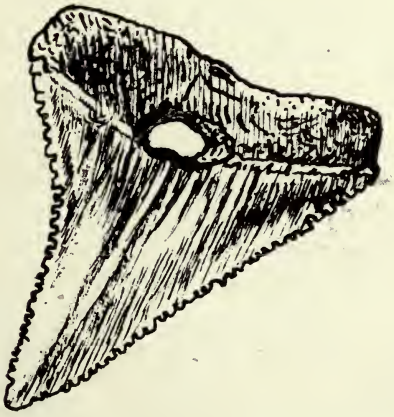
Whether or not this tooth was imported and modified by the Havana people cannot be determined with any degree of certainty, but the evidence indicated it was. As previously mentioned no shark teeth have been reported from Mississippian sites in the Illinois Valley, but they have been reported in Havana sites. Secondly, Struever's work at the site which produced 2285 sherds produced only 50 (or .0214%) Mississippi sherds.[3] Finally, we have much evidence from the Ogden-Fettie Site indicating long and dispersed supply lines. Foreign materials from the site include obsidian, copper, exotic cherts, and marine shells.

* Cole and Deul, **Rediscovering Illinois**, 1937, pps. 171-181.

1 Letter from Dr. Paul W. Parmalee, Curator of Zoology at the Illinois State Museum, dated October 31, 1962.

2 Fowler, Melvin L., "Pioneer Illinois Archaeologist John Francis Snyder," in **John Francis Snyder: Selected Writings** (Clyde C. Walton, ed.), pps. 196-7, Illinois Historical Society, Springfield, 1962.

3 Wetterston n. d.



(Drawing by Brouillette)

AN EARLY WOODLAND VESSEL FROM WISCONSIN

Carol Mason

In Wisconsin an early Woodland horizon has been often identified by the presence of the pottery type **Dane Incised.** This type is considered an areal manifestation of **Black Sand Incised,** the ceramic type whose stratigraphic position under Hopewell in Illinois places it in a pre-Middle and presumably Early Woodland context. However, the occurrence of **Dane Incised** sherds with unmistakably later associations indicates that its temporal range is perhaps too great to make it a consistently reliable marker for an Early Woodland horizon elsewhere in Wisconsin. For example, the occurrence of **Dane Incised** sherds in the second of three sequent strata of late Middle Woodland materials at the Mero site in Door County (Mason n. d.) provides a relative dating inconsistent with Early Woodland status there.

However, there is another ceramic candidate for Early Woodland in Wisconsin, one whose identification is based on relationships with the earliest Early Woodland in Illinois and elsewhere in the Middle West. This pottery type, **Marion Thick** (Griffin 1952: 97-98), does not occur in great quantity

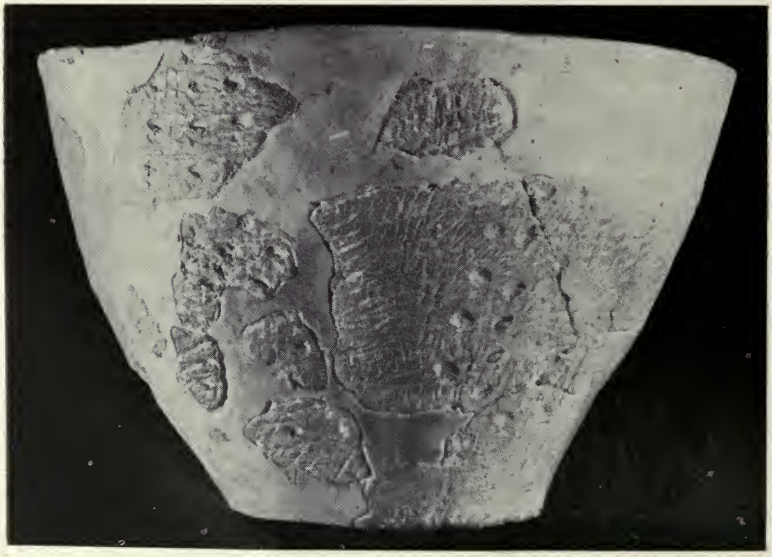


FIG. 1 — MARION THICK vessel from the Oshkosh Public Museum.

anywhere, but its sporadic distribution within the boundaries of the state provides a potentially useful ceramic indicator in additional to **Dane Incised.** The collections of the Oshkosh Public Museum contain a reconstructed example of a **Marion Thick** vessel. This specimen (museum no. 410/1753) was found in 1931 at the Robert Grignon Trading Post site near Omro in Winnebago County, Wisconsin. In fragments when recovered, it was subsequently reconstructed by personnel of the Milwaukee Public Museum and the Oshkosh Public Museum. Given the available sherds (33), the reconstruction seems to be a fairly accurate one with sufficient sherds surviving to make the distinctive basal configuration unmistakable. Unfortunately, the Grignon Trading Post was a multicomponent site which had been considerably disturbed even before the Oshkosh Public Museum excavated there in 1931, and little information has survived as to the original provenience and associations of the vessel. The following description of it is offered for the purpose of making available in the literature more data on Wisconsin examples of this early pottery type:

method of manufacture — no clear indication since no sherd edges (other than rimsherds) were observable. Long lines of horizontal breakage may, in fact, be coil fractures.

temper — small to very large particles of crushed rock; in places these extrude onto the surface of the vessel.

color — brown (gray-brown to reddish brown with most of the exterior sherds of the latter color).

surface finish — both exterior and interior surfaces are cordmarked. Cordmarking is irregular on the exterior with considerable crossing over; sometimes vertical and horizontal cordmarked lines form a series of small squares on some exterior sherds. Interior cordmarking is more regular and is aligned parallel to the rim; cordmarking appears smoothed on the interior, perhaps as a result of handling during the process of manufacture. On both interior and exterior, cordmarking extends from the base to the rim and in places over the rim. The basal interior is plain, but the exterior is cordmarked.

rim — straight and flat. Cordmarking on the rim seems simply

to be a continuation of body cordmarking, not a subsequent decoration.

body — general shape is an inverted truncated cone. Flat base.

thickness at rim — 9 mm.

thickness at base — 16 mm.

height — more than 150 mm. There are not enough articulated sherds to be sure the reconstruction height, 170 mm., is correct.

diameter at base — 113 mm. (approximately).

decoration — consists of vertical columns of fingernail punctations in groups of three columns placed irregularly around the vessel. The orientation of these groups of columns is sometimes to the true vertical, sometimes considerably at an angle from it. Punctations do not reach the base but stop at between 30 and 60 mm. above it.

St. Norbert College
West DePere, Wisconsin

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CERAMIC RELATIONSHIPS OF FOUR LATE WOODLAND SITES IN NORTHERN OHIO

James E. Fitting
University of Michigan

INTRODUCTION

In Northern Ohio, in the area around Cleveland, there is a distinctive Late Woodland manifestation. This has been called the "Whittlesey Focus." Greenman (1937: 350-1) placed this focus in the Iroquois Aspect of the Upper Mississippi Pattern and named it after Charles Whittlesey who had surveyed and published on sites in Northern Ohio in the previous century. The Whittlesey Focus was again discussed by Morgan and Ellis who considered Fairport Harbor, Reeve,

South Park and Tuttle Hill to be the main components. Using a statistical comparison of all traits except the ceramics they came to the conclusion that South Park and Tuttle Hill were very close and could be opposed to Reeve and Fairport Harbor (Morgan and Ellis 1943: 50-1). Greenman had suggested that the Erie might have inhabited the Reeve site (1935a: 9) and Morgan and Ellis (1943: 57) also thought that the Erie might be responsible for the Whittlesey sites.

Greenman (1939: 25-6) placed the Wolf site in Southeastern Michigan in the Whittlesey Focus and emphasized its similarities to "sites of the Iroquois Aspect in Northern Ohio."

The Whittlesey Focus played an important part in Griffin's (1964: 368) hypothesis for an **in situ** development of the cultural type associated with Iroquoian speakers in the early historic period.

Morgan (1952: 96-7) summarized the available information on the Whittlesey Focus and again suggested that this material might be Erie. He also mentioned a possible relationship to the Wolf site in Michigan. Griffin (1957: 20) stated again that the Whittlesey sites were the work of the Erie.

The identification of the Whittlesey Focus with the Erie has been far from universal. Greenman, in a later publication, did not feel that the Whittlesey Focus was the work of either Erie or Seneca, taking Parker's and Harrington's identification of the Ripley and Silverheels sites. Lee (1958: 27) also adopted this position. He included the Parker Earthworks in Ontario in the Whittlesey Focus. MacNeish, in his discussion of Erie pottery types, did not include any of the Whittlesey material. Only one of his Erie types, Ripley Corded (1952: 25), was considered to be even influenced by the Whittlesey Focus types.

In January of 1964, I examined several collections from Whittlesey sites in the Ohio State Museum and the Cleveland Museum of Natural History, as well as private collections. This was undertaken in connection with a study of Late Woodland material from Southeastern Michigan. A brief statement on the relationship between the Southeastern Michigan Younge Tradition and the Whittlesey Focus in Northern

Ohio has already been presented (Fitting, 1964: 313-5). The data collected on internal ceramic relationships among these Ohio sites was not included at that time and warrants a separate discussion.

CERAMIC RELATIONSHIPS

Since the re-examination of ceramics from the Whittlesey sites was undertaken in a short period of time only rimsherds were studied. The reports on these sites contain a detailed description of paste, tempering material, hardness and other such characteristics. Each report has established different groupings or types which are not comparable. Therefore, a series of descriptive types was established for the present analysis. Many of the first set of groupings which were established in the field were not to be mutually exclusive. After re-evaluation and re-combination it was found, however ,that 96 percent of the ceramics from Fairport Harbor, Reeve, Tuttle Hill and South Park could be placed in four groups or descriptive rimsherd types.

The first of these types was Tuttle Hill Notched (Plate I, a, b). This type included 83 percent of the rimsherds from Tuttle Hill and 75 percent of the rimsherds from South Park. It is characterized by a notched strip of applique on the rim of the vessel, or more commonly, slightly below the rim. Other forms of decoration, linear incising or punctation, may occur in connection with the notched applique but they are subordinant and secondary decorations. This is similar to Morgan and Ellis's (1943: 28-33) sub-groups 3, 4 and 5. It also incorporated all of Greenman's (1935a: 51, 56) variant 8.1.

Numerous illustrations of Tuttle Hill Notched rimsherds have been published (Greenman 1935a: Figure 34, A, B, E, Figure 35, A, B. C, 1935b: Figure 12, A, B, 1937: Figure 38, Figure 42, 1939: Plate II, Figure 2, d, Morgan and Ellis 1943: Figures 14, 15, 16). Both Morgan (1952: Figure 36, I) and Quimby (1952: Figure 37, B) illustrated a single vessel of Tuttle Hill Notched. Their drawings seem to be impressions of a vessel reported by Morgan and Ellis (1943: Figure 15) from Fairport Harbor.

The second rimsherd type is Reeve Horizontal (Plate I, c)

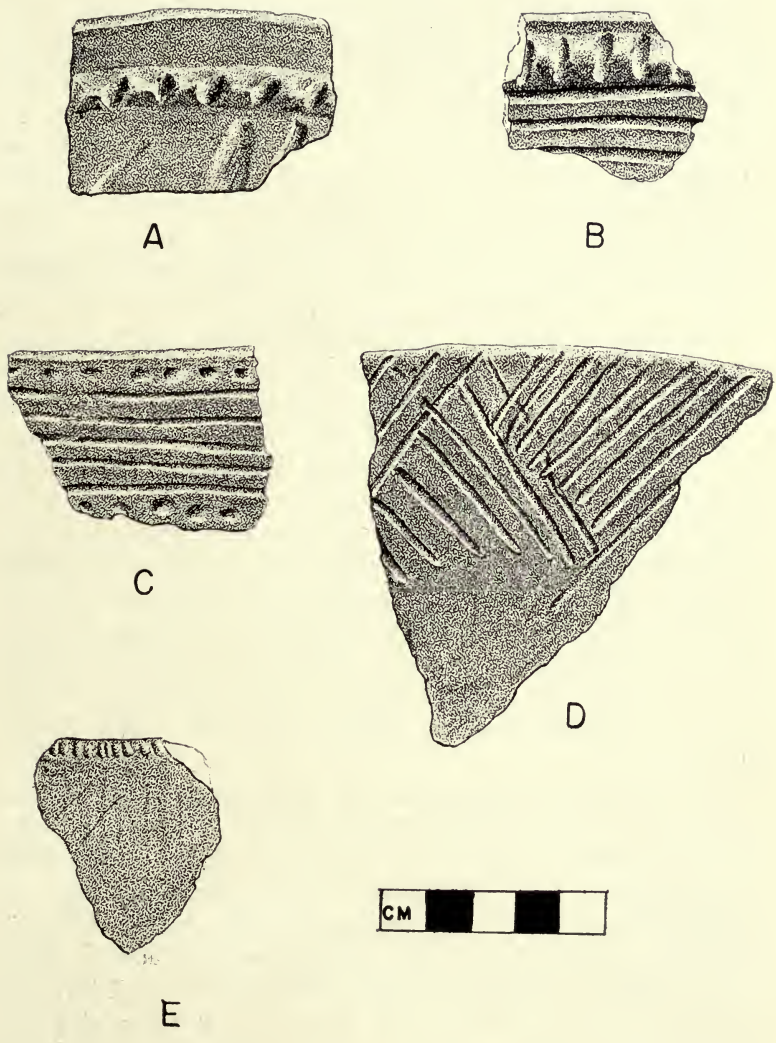


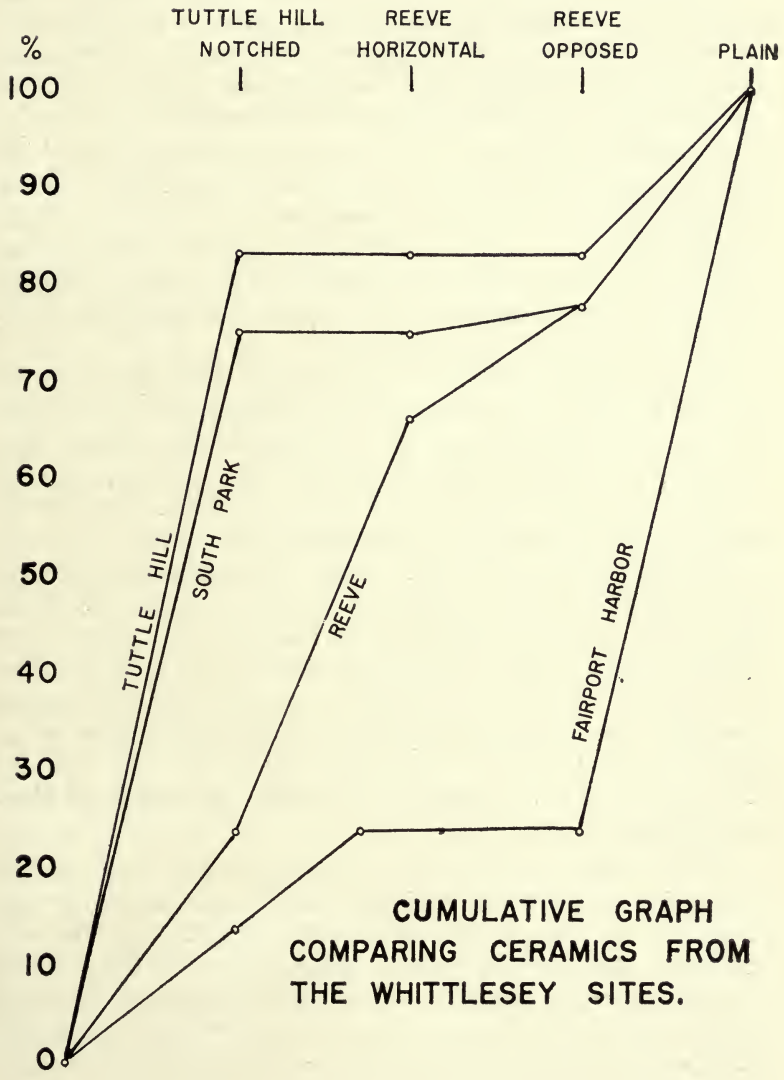
PLATE I

which occurred in greatest frequency at the Reeve site (42 percent). There the plain rim of a vessel has been altered by horizontal incising running parallel to the lip. This type was not represented at Tuttle Hill or South Park but is illustrated in the Reeve report (Greenman 1935a: Figure 30, D, Figure 31, A, B, D) and the Fairport Harbor report (Morgan and Ellis 1943: Figure 14, sub-groups 1 and 2).

The third descriptive rimsherd type is Reeve Opposed (Plate I, d). This, too, reaches its highest frequency (13 percent) at the Reeve site. This type is characterized by opposed oblique incisions on a plain rim. This type is illustrated in the South Park report (Greenman 1937: Figure 41, J) and the Reeve report (Greenman 1935a: Figure 33, D). This last sherd looks disturbingly like one later illustrated by Morgan (1952: Figure 35, V) as a Feurt Focus rimsherd.

The fourth descriptive group consists of plain rimsherds with occasional lip alteration (Plate I, e). These were present on all sites but were most common at Fairport Harbor (76 percent). Most of these rimsherds were cordmarked up to the lip. Some were smoothed or smoothed cordmarked. Lip alterations consisted of either tool notches or thumb or finger impressions on either the outer or both inner and outer lip surfaces. These are illustrated from Reeve (Greenman 1935a: Figure 39, E, Figure 34, D), South Park (Greenman 1937: Figure 40), Tuttle Hill (Greenman 1937: Figure 34, Figure 39) and Fairport Harbor (Morgan and Ellis 1943: Figures 16 and 17).

In addition to these types, one other named type, Parker Festooned (Lee 1958: 17-8), was included. This was done because of Lee's suggestion that the Parker Earthworks should be included in the Whittlesey Focus. The percentages of Whittlesey types, Parker Festooned and a group including all other ceramics from these sites is given in Table 1. There is less than one percent of Parker Festooned on all Whittlesey sites. This type reaches its frequency (48 percent) on the late Younge Tradition Wolf site in Southeastern Michigan. There is also less than one percent of Whittlesey types in Young Tradition sites. This low occurrence is more readily explained by contemparaneity of distinct ethnic groups than by ethnic unity. As Griffin (1944: 366) has pointed out, "the



CUMULATIVE GRAPH COMPARING CERAMICS FROM THE WHITTLESEY SITES.

diagnostic trait of today turns out to be the link trait of tomorrow."

There are some discrepancies between my sherd counts and the sherd counts in the original reports. Type series from these sites are now in institutions other than the Ohio State Museum. There are indications that the present series is representative of the original collection with a maximum of five percent variation in count so the **relative** position of the site would not be altered. As an example, Greenman (1935a: 23) reported 402 rimsherds from Reeve while I examined only 317; Morgan and Ellis (1943: 26) reported 774 rimsherds while I examined only 632 (incidently, the number of rimsherds in the sub-groups used by Morgan and Ellis totals more than 900).

The percentages of the various types from the four sites are listed in Table 2. Because of the complete absence of some types at several of the sites it is difficult to represent their relationship with a bar graph. The cumulative graph (Jelinek 1962) was more useful in an ordering of these sites. The results of this ordering are presented in Figure 1.

The ordering is exactly the same as that obtained by Morgan and Ellis using only the non-ceramic material from these four sites. In their ceramic analysis they grouped South Park and Tuttle Hill (which we could also do) and opposed them to Fairport Harbor with Reeve occupying an intermediate position. Griffin (1944: 368) also noted a high degree of cohesion between Tuttle Hill and South Park and seconded Morgan and Ellis in opposing these sites to Reeve and Fairport Harbor.

There might be, however, some dispute as to the relative chronological positions. Possible historic trade materials were reported by Morgan and Ellis (1943: 41-2) from Fairport Harbor. Griffin (1944: 368) cited Morgan and Ellis on the subject of trade material and Quimby apparently accepted this position (1952: 106). Morgan (1952: 97) later placed the Fairport Harbor site late in the sequence because of the so-called trade material.

Morgan and Ellis (1943: 42) suggested that "fragments of chinaware and stoneware . . . are all evidently relics of pioneer times." I examined the collections and found the fol-

lowing datable pattern on white paste earthenware: four sherds of Painted Blue (late 1820's, early 1830's), two sherds of Blue Edge (late 1820's early 1830's), one sherd of Red Print (as early as 1830) and one sherd of Brown Print (probably 1830's). These dates are for the maximum occurrence of these types in the Detroit area (Fitting 1964: 157-166).

Morgan and Ellis thought that the white kaolin pipes were trade objects since they were found in all levels of the aboriginal occupation. The pipes from the site are not early 17th century types. There is no resemblance to other early 17th century pipes such as those found in the Jamestown excavations (Harrington 1952: Figure 191). They are mold made which, apparently, was not common until the end of the 17th century (Petersen 1963: 2). The kaolin pipes more closely resemble those from 19th century sites than those from 17th century sites. Although no maker's marks were observed, fluted bowls were common. A similar fluted pipe bowl was found among the early 19th century material from Mackinac Island (Petersen 1963: 7). They were used at least as late as the 1850's since one was found at the Riviere au Vase site (Fitting 1964: 171). At Kipp's Post (Woolworth and Wood 1960: 273) 12 out of 23 pipe bowls were fluted, making it the most common decorative motif. This site dates to the late 1820's so the pipes could well date to the same period as the historic ceramics.

The other historic material was unavailable for my examination but from published descriptions it it not diagnostic of an early occupation. Items diagnostic of such an occupation, such as early trade beads, axes and kettle lugs, were absent.

Morgan and Ellis (1943: 58) thought that the South Park site was earlier than Fairport Harbor but still late in the cultural sequence because of the presence of an Oneota vessel (Greenman 1937: Figure 33). Griffin (1944: 368), on the other hand, felt that the South Park, Tuttle Hill and Taylor sites were very early and perhaps dated to some time near the close of the Hopewell period. He cited the use of dentate stamping as a basis for this. My examination revealed a single dentate stamped rimsherd from the South Park site, less than one-fourth of one percent of the total sample, and only six dentate stamped rimsherds, similar to those from the

Taylor site, in the collection from Tuttle Hill. I wish to emphasize that this type of dentate stamping is similar to that from the Late Middle Woodland Taylor site (Griffin 1944: 368) rather than later dentate forms such as Vase Dentate (Fitting 1964: 326-8) or Sparta Dentate (MacNeish 1952: 45). These dentate stamped rimsherds make up about two percent of the Tuttle Hill ceramics which I examined. This site, however, contained a high proportion, 16 percent, of non-Whittlesey types suggesting a mixed occupation.

An alternate hypothesis (Fitting 1963: 13-4) was suggested by examining the published reports and re-affirmed by examining these collections. Fairport Harbor might be the earliest in the sequence, Reeve intermediate and South Park and Tutthe Hill late prehistoric or early historic.

The Fairport Harbor site does not contain trade material. On the contrary, the largest numbers of plain rimsherds and the simplest design elements were found on this site. On an analogy with Southeastern Michigan this would suggest an **early** placement in the developmental sequence.

The Oneota vessel from South Park, given Griffin's (1937: 181) identification of Oneota, could be late prehistoric or early historic. The weeping eye motif, a southern cult element, was represented at Reeve (Greenman 1935a: Figure 25, 15) and I have seen it on pipes in a private collection of material from South Park. Olaf Prufer has shown me a metal projectile point from South Park in the collections of the Cleveland Museum of Natural History. This object, according to Prufer, is made of European metal.

The association of aboriginal trade sherds in both Michigan and Ohio also suggest a late prehistoric placement for South Park and Tuttle Hill. Parker Festooned is found only in the late Younge Tradition Wolf phase in Southeastern Michigan (Fitting 1964: 301) which probably post dates A. D. 1400. Almost all of the Parker Festooned rimsherds in the Whittlesey collections, 14 out of 15, were from South Park and Tuttle Hill. A single rimsherd of this type was found in the Reeve collections and it was absent from Fairport Harbor. The reverse situation is just as true. Tuttle Hill Notched, which I now believe to be a late type, is found at Springwells

and Wolf Phase sites in Southeastern Michigan which are late in the Younge Tradition (Fitting 1964: 314).

ETHNIC IDENTIFICATION

There has always been a problem in the identification of the Whittlesey Focus Peoples. Greenman (1935a: 9) first suggested that they might be Erie but later Greenman 1937: 351), after examining the material attributed to the Erie and Seneca in New York, felt that ethnic identification was impossible. Morgan and Ellis (1943: 57), Morgan (1952: 97) and Griffin (1957: 20) all attributed Whittlesey material to the Erie. Lee, while he did not think this group was historic Erie, thought that the Whittlesey peoples might have been ancestral to the Erie (Lee 1958 29).:

Ridley (1961: 66) weighed the evidence and decided against the Whittlesey Focus representing the Erie. As he pointed out, this would require re-assigning the Ripley and 28th Street sites to the Neutral. He rejected the idea that they were Mascoutens but mentioned the Squenquironon who appear in the Cleveland area on Swanson's 1656 map.

MacNeish (1952: 22-4) admitted the tentative nature of his Erie sequence. He suggested a late prehistoric differentiation between Neutral and Erie with a common base in the Southwold ceramic assemblage. Ripley was his historic example of an Erie site and Goodyear (and the 28th Street site) occupied an intermediate position. After making a detailed examination of the Niagara frontier sequence, Marian White (1961: 61) did not make an ethnic identification for the Goodyear site. Even at Ripley the unique ceramic type was Ripley Corded which MacNeish himself suggested was related to Whittlesey materials. There is also the strong possibility of more than one occupation at the Ripley site (White, personal communication).

In one of the more recent studies of the Erie, White (1961: 40-9) demonstrated that the maps locating the Erie to the west of Chautaqua Lake were drawn after the defeat and destruction of the Erie. There may, however, have been several usages of the term 'Erie'. They were a populous nation with two to three thousand warriors and there are several references to the "tribes" of the Erie. Samson's 1650

map shows them as the only group on the entire south shore of Lake Erie.

If we accept the early historic position of both South Park and Ripley they may both be Erie variants. Both the Ripley site and the late Whittlesey sites have been compared with both Neutral and Seneca sites. The Ripley site seems to more closely approach Neutral material while the Whittlesey styles have strong Seneca affinities. Long Point Nocked, Dutch Hollow Notched, Seneca Notched and Seneca Barbed (MacNeish 1952: 41-4) all are analagous to Tuttle Hill Notched. McNeish even illustrates a sherd of Long Point Horizontal with what appears to be a notched applique collar. These notched and barbed types constitute 92 to 99 percent of the ceramics on his five most recent Seneca sites (MacNeish 1952: 40).

Parker, Winterberg, Skinner, Harrington and Griffin (Griffin 1944: 366) have all recognized a similarity between Seneca and Erie when opposed to the eastern Iroquois groups. Given propinquity and a common cultural base we would expect such close similarity.

Another series of ceramic analogies is to be found in the Fort Ancient material to the south of the Whittlesey sites. Almost all investigators have noted these similarities. In comparing this material Griffin (1943: 238) stated, "in each Focus, however, there are sherds that could be lost in a collection from the other Focus, even though representative selections could easily be distinguished from each other." Griffin (1943:34-5, 1957: 22) identified the Fort Ancient material as probably Shawnee. There is material of Fort Ancient type at the Starved Rock site in Illinois which is early historic (Griffin 1957: 19-20). One of the ceramic types from Starved Rock has been named La Salle Filleted (Wittry: personal communication). There is a sherd of LaSalle Filleted (shell temper) illustrated in the Bell site report (Wittry 1963: 27) which would be easily lost in a collection of Whittlesey material.

There is another possible connection between the Bell site, which is predominantly historic Fox, and the Whittlesey material from Northern Ohio. There is a distinctive minor ceramic grouping which consists of cordmarked grit tempered

vessels with smoothed shoulders (Wittry 1963: 25-6). The outstanding characteristic of this pottery is the fact that the lips were crimped with fingers. At the Fairport Harbor site 76 percent of the Whittlesey ceramics were plain rims. Out of this number 35 percent showed evidence of lip alteration with the fingers or finger and thumb. In the original site report this variant had been grouped with those that were notched with a tool (45 percent of the sample of plain rimsherds which I examined were of this variant, the other 20 percent was unaltered on the lip).

Wittry felt this to be a characteristic of either "Sauk, Potawatomi, Kickapoo or Mascoutin," in that order of likelihood. Others have favored the Potawatomi or Mascoutens.

There is evidence that groups of Potawatomi, and this includes the Mascoutens which may have been a sub-tribe of Potawatomi (Greenman 1961: 17), inhabited parts of Southeastern Michigan and the area along the southwest shore of Lake Erie. There is some geographical distortion but both Champlain's 1632 map and Sanson's 1655 map place the Asistagueron or "fire nation" in this area. Ridley (1961: 60) has identified the fire nation as the Mascoutens alone, while Kinietz (1940: 308) believed these references were to the entire Potawatomi group. Greenman (1961: 14) felt that this term was a collective reference for Mascouten, Fox, Sauk, Potawatomi and Nassouaketon (an Ottawa tribe?). This would be more in line to references to an extremely populous nation. In any event there are constant references to a westward movement of many Algonkian speaking peoples in the proto-historic and early historic period.

Because of the lack of good historic sources for the location of these groups we can only make speculations. There is a possibility that an Algonkian group, possibly ancestral to the Potawatomi, Mascoutens or even the "Squenquioronon" (although this is unlikely if the identification of Fox holds up) inhabited the area around Cleveland prior to the contact period. This might even have been prior to the beginning of the Iroquois expansion.

Fairport Harbor, east of Cleveland, might represent such a stage. The small percentage (less than 25 percent) of later types could have been the products of captive women or

trade material. The complete replacement of ceramic types does not suggest a gradual evolutionary sequence in the Whittlesey area. Reeve shows high percentages of types that are rare or absent on other Whittlesey sites. The latest material, that from South Park and Tuttle Hill, may be representative of short Erie occupation of the area after they had driven the "fire people" to the west and before their own destruction at the hands of the League. The last three sites, Reeve, Tuttle Hill and South Park, all show evidence of contact with Fort Ancient, Younge Traditions, Oneota and Iroquois Cultures.

CONCLUSIONS

Previous examination of Whittlesey Focus material had failed to quantify the ceramic relationship between sites grouped in this focus. A cumulative graph re-affirmed the sequence which was developed for non-ceramic traits. A re-examination of the material from the sites, however, suggested that Fairport Harbor was early and South Park and Tuttle Hill were late.

An examination was made of the sources previously used in making ethnic identifications of the bearers of the Whittlesey culture. No positive identification was made but the Erie was a strong contender.

It was also suggested that the Fairport Harbor site might represent a different cultural group from that represented by the other Whittlesey material. This conclusion, as well as the others has been based primarily on an analysis of the ceramics from these sites and is subject to the inherent limitations of the type of analysis.

ACKNOWLEDGEMENTS: I would like to thank Raymond Baby, Curator of Archaeology at the Ohio State Museum, for allowing me to examine the collections at the museum and for the hospitality shown me during my stay at Columbus. Olaf H. Prufer extended the same courtesies to me while I was in Cleveland. A number of individuals read earlier versions of this paper and made many helpful comments. I would particularly like to thank James B. Griffin, Raymond Baby, Olaf Prufer, Marian White, Warren Wit-

try and Frank Ridley for their suggestions. The rimsherd illustrations were drawn by Diane Foster. Parts of the research in this paper were supported by a Wayne State University Faculty Research Grant-in-Aid and by a National Science Foundation grant to the University of Michigan Museum of Anthropology.

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TABLE I

DISTRIBUTION OF CERAMIC TYPES FROM FOUR WHITTLESEY SITES

	Whittlesey Types		Parker Festooned		Other		Total
	N	%	N	%	N	%	
Tuttle Hill	204	84	2	1	37	15	243
South Park	429	96	12	3	5	1	446
Reeve	309	97	1	.3	7	2.7	317
Fairport Harbor	630	99.7	0	0	2	.3	632
Total	1,572	96	15	.9	51	3.1	1,638

TABLE II

DISTRIBUTION OF WHITTLESEY TYPES FROM FOUR WHITTLESEY SITES

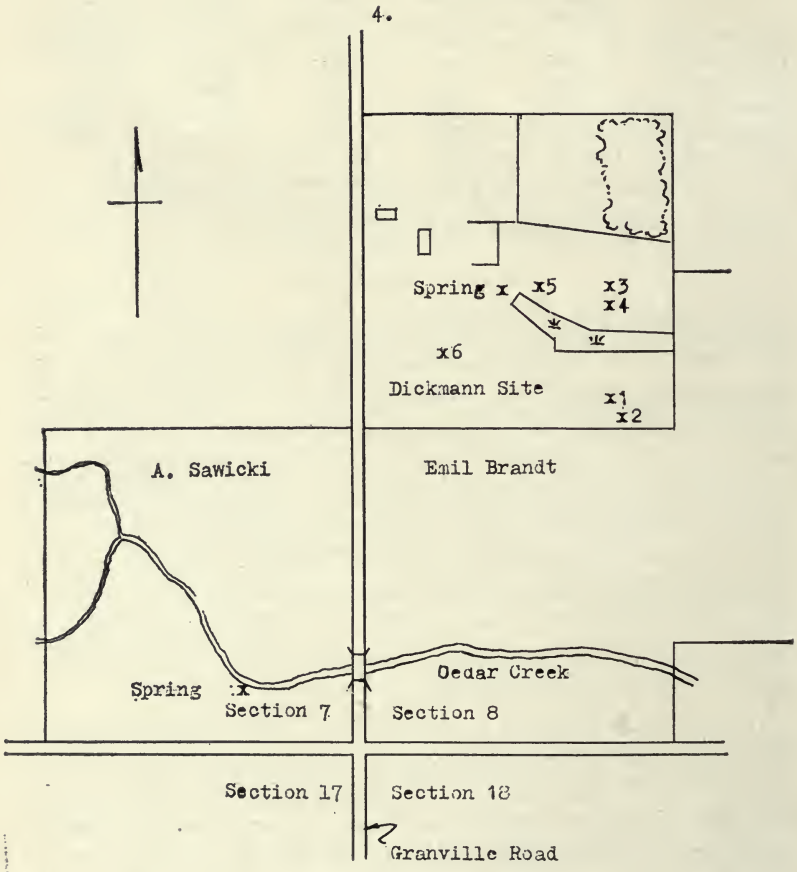
	Tuttle Hill Notched	Reeve Horizontal	Reeve Opposed	Plain	Total Rimsherd Count
Tuttle Hill	83%	0%	0%	17%	204
South Park	75%	0%	3%	22%	429
Reeve	24%	42%	13%	22%	309
Fairport Harbor	14%	10%	0%	76%	630

A CAMPSITE IN CEDARBURG TOWNSHIP, OZAUKEE COUNTY

Elmer C. Daalmann

The references to Cedarburg township in past issues of The Wisconsin Archeologist are very limited. A group of three conical mounds in Hilgen Spring Park at Cedarburg has been reported in an early issue. When the range of references is extended to Ozaukee County, an interesting bit of information states that the Chippewa village of Wahmtee-goosh (Little Frenchman) was located at Saukville. The most recent article, **A Red Ochre Burial in Ozaukee County** appears in the June 1958 volume. If this burial is located near Thiensville, it would lie ten miles southeast of the area covered by this report. This campsite is five miles southwest of Saukville.

The Dickmann site is a plowed field, about twenty acres, that is located on the east side of Granville Road north of Cedar Creek in section 8, T10N, R21E. The low hills around the edges of the field slope to a swampy central flat that drains to the east. On the road side of this grassy flat there is a spring that is now sluggish and stagnant. The scraper and the arrowheads were found on the sloping hillsides surrounding the spring and its narrow drainage basin. These artifacts may represent normal loss when the spring was used as a temporary campsite. No potsherds, mounds or rubbish heaps were found to indicate extended occupancy. The arrowheads are Woodland and are made from chert and quartzite that is similar to the rough drift material in the furrows. These specimens are numbered in the photograph to indicate the points where they were found. The scatter of these

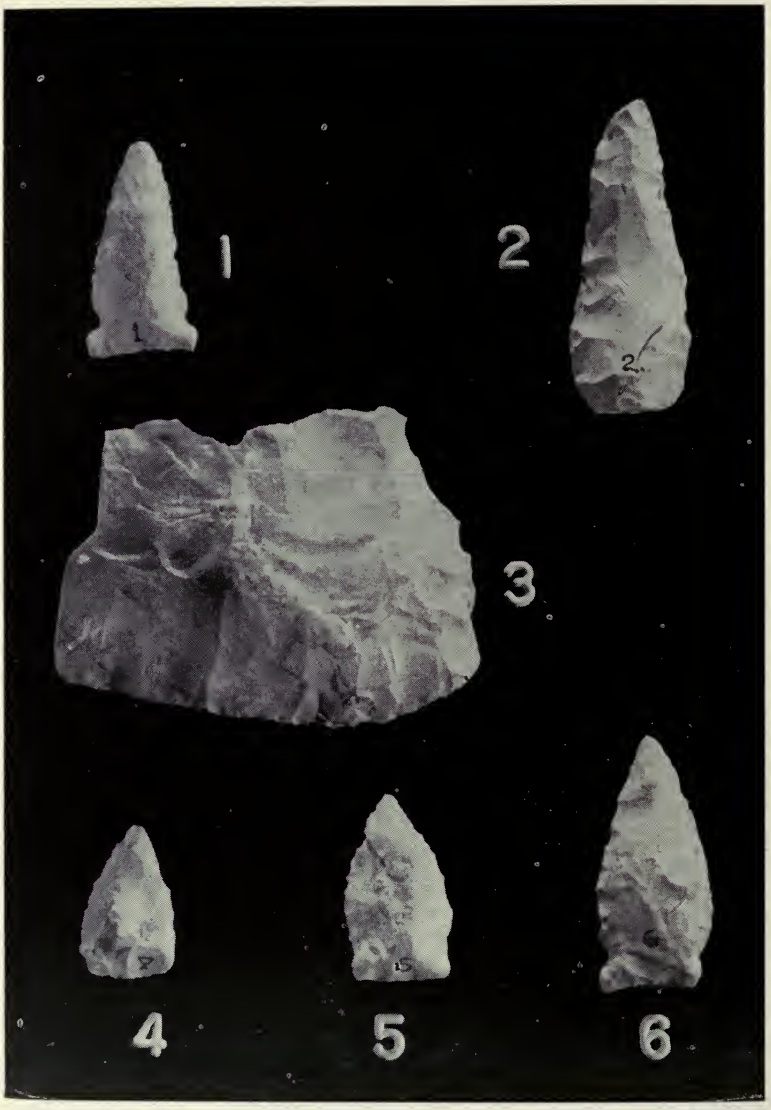


DICKMANN SITE
SECTION 8, T10N, R21E
TOWN OF CEDARBURG
OZAUKEE COUNTY, WIS.

points is shown on the map of the site. It would be interesting to speculate on the distance that these pieces moved from their original position during fifty years of cultivation. The displacement by plowing must have formed a random pattern because the items are scattered about the field. If the path of travel was oriented, the implements would cluster about the edges of the field. Plowing to a depth of six inches may have buried more than the six that were found on the surface. From this indication, a guess can be made that thirty artifacts still lie under the soil and will be uncovered sometime in the future.

The map could portray an intensive search of the area rather than a campsite. From this point of view, an equal distribution would be found on the Emil Brandt farm that is situated between the Dickmann site and the north bank of Cedar Creek. Arrowheads have been found on this farm by Mr. Brandt, but these had been misplaced and could not be compared with the items in the photograph. Heresay reports about arrowheads having been found near a spring on the south bank of Cedar Creek stimulated a search along this bank. A tiny clear flowing spring was found hidden in the tall marsh grass on the A. Sawicki property west of Granville Road. No artifacts were found on this property. Two arrowheads were found about a mile north of the Dickmann site. These were on the Dickmann farm that is located on Pleasant Valley Road one half mile east of the intersection of County Trunk Y and Highway 143. All of the artifacts in the photograph are available for examination at this farm.

Mr. Brandt who lives on the farm on the east side of Granville Road north of Cedar Creek has inherited a collection of 163 arrowheads in a cigar box. None of these are numbered or cataloged, but Mr. Brandt states that they came from the Cedar Creek area. A quick survey of this collection did not reveal any Sandia, Folsom, Yuma or turkey tails, but there were two truncated barb points similar to those in the photographs facing page 76 of the March 1964 issue of The Wisconsin Archeologist from the collections of Paul Turney, Paul Koeppler and Robert Snyder.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By

David A. Baerreis

and

Guest Reviewers

THE BOOKSHELF

Lake Superior Copper and the Indians: Miscellaneous Studies of Great Lakes Prehistory, edited by James B. Griffin. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 17, 1961. 189 pages, 2 figures, 5 maps, 33 plates. $2.50.

Although it has been several years since this publication first appeared considering the importance of the use of copper in prehistoric Wisconsin cultures a review is still essential. The volume reports on a series of field investigations beginning with work on Isle Royale carried out in 1953 and 1954 under the supervision of Roy W. Drier as part of the Michigan College of Mining and Technology Prehistoric Copper Mining Investigations. In the opening pages of the study, Professor Drier reports on the field work ((pp. 1-7) while Professor James B. Griffin of the University of Michigan discusses the archaeological finds resulting from this work and provides an extensive collation of material derived from early sources pertaining to Isle Royle and the Lake Superior copper district as a whole (pp. 7-76). As part of the general program of work initiated by the Isle Royale explorations, Griffin collaborated with George I. Quimby of the Chicago Natural History Museum in two summer surveys around the Lake Superior basin in 1956 and 1957 and then in the summer of 1959 with Mark Papworth. Several of the sites located as well as specimens examined are considered by Griffin or Quimby or both of these individuals. The final portion of the volume contains a report by Roy W. Drier, "Archaeology and Some Metallurgical Investigative Techniques (pp. 134-147); "Metallurgical Examination of Five Copper Artifacts from Southern Michigan" by William C. Root (pp. 148-150); and, "Trace Element and Metallographic Studies of Prehis-

toric Copper Artifacts in North America: A Review" by Tyler Bastian (pp. 150-175). It should be evident that the subtitle of the volume as a whole, "Miscellaneous Studies of Great Lakes Prehistory," is an appropriate one.

New interpretations of the prehistory of Isle Royale are limited by the sparsity of cultural material obtained in the excavations. In evaluating this material in conjunction with earlier collections from the island, Griffin informs us that the sherds recovered from several village sites are to be assigned to western Iroquoian complexes (about A. D. 1500-1600) or to Late Woodland complexes, most of the latter being closely related to Blackduck which is also close to the historic period. However, not all of the mining activities are attributed to this late time horizon. Griffin presents an analysis of the arboreal specimens from Pit 25, one of the aboriginal mining pits on Indian Point, indicating that all of the trees are present on the island today. Following this a series of pollen studies in nine bogs by J. E. Potzer are skillfully related to the sequence of lake levels. We are then told that the significance of this material is that the mining activity in Pit 25 took place during the period between the Nipissing and Algoma stage of the lakes, an interval dating about 2200 to 1100 B. C. and representing a cooler, moist period after the time of maximum warmth in the western Great Lakes. We are also informed that this is the period during which the Old Copper culture seems to have had its greatest development and that the Pit 25 mining operations, with reasonable certainty, produced copper which was made into implements of the Old Copper culture. One must return to the introductory section describing the excavation of Pit 25 to appreciate that two radiocarbon dates from Pit 25 are the means by which the chronological association between the pit and the lake stage was made.

Despite the looseness in style and organization, the account of Isle Royale provides fascinating information for the visitor to this National Park as well as for the archaeologist. The excellent map of the island will be particularly helpful to the island visitor.

The papers which follow are important in increasing our knowledge of the Indian occupation of the Lake Superior basin. The Pic River site, south of Heron Bay, Ontario,

yielded small quantities of cultural materials including grit-tempered, cord-wrapped paddle impressed pottery in association with trade goods suggesting a date of about 1700 A. D. Quimby feels the tribe represented is Chippewa. The McCollum site on a bay of southeastern Lake Nipegon, Ontario, was investigated because a series of finds attributed to the Old Copper culture was made there. Analysis of the specimens indicated that they have a late time placement within the time span of Old Copper. A further series of short papers describe various copper-related finds and related these to the lake and vegetational sequence. Interpretation, as in the case of the Isle Royale material, is limited by the small sample size of collections dealt with in all instances.

A brief section entitled "Interpretation of Technology and Cultural Level from the Copper Pits and Included Materials" (pp. 127-129) is as close as we come to a summary of the work on cultural materials in the volume. We learn that copper mining was apparently carried on from about 3000 B. C. to close to the historic period—roughly 4500 years. Perishable materials found in water-logged pits indicates the Indians had some skill in woodworking. Griffin points out that such woodworking tools as grooved axes, adzes, and gouges are a part of the Late Archaic cultural complex of about 3000 to 1000 B. C. and suggests that the Old Copper complex is a regional representative of this Late Archaic period.

The final portion of this volume deals with metallurgical approaches to the analysis of archaeological problems. The principal impression that one gains of the metallurgical analytical work which has been reported on Old Copper artifacts is one of confusion. The work has been piecemeal, isolated and too frequently metallurgically unsophisticated. Some of the reported work has been weird indeed (see citation to Wilson and Sayre, 1935, p. 109) while some has been merely trivial.

Many of the conclusions have been entirely unjustified or the original papers incorrectly quoted. For example in the study by William C. Root (presumably organized by the editor of the volume), on pages 148 and 149 we find a quotation from the work of W. F. Flanagan on Axe 27651. "The very large twinned crystals, or grains, indicate that the final

treatment has been a high (temperature?) anneal after previous mechanical working." Or, later, quoting from the work on Axe 52238 "The treatment has been similar to that of the other axehead except that its final grain size is much smaller indicating a lower temperature or shorter time of final anneal or a different purity." The obvious answer to the different grain size of the two axes is that the pieces of copper from which the axes were fabricated were much different to begin with. One of the outstanding characteristics of the structure of Great Lakes native copper is the large difference in grain size between different pieces.

In attempting to evaluate the general status of metallographic studies of prehistoric copper artifacts, there is so much misinformation, doubtful information and perhaps quotes out of context that one is puzzled where to begin. Much of the difficulty arises from lack of acquaintance with Michigan copper, its structure, chemical analysis and the current theories of its geologic origin. One simple illustration will suffice. These copper deposits are believed to be 500-600 million years old and are of hydrothermal origin. We know that copper deposited hydrothermally is always twinned as a result of growth accidents. Hence it is not necessary to assume the copper has been mechanically worked and recrystallized to account for the twins. Undoubtedly, the grain size of the copper could increase over geologic time, the driving force for grain growth arising from tectonic processes.

It is apparent that there has been frequent argument over the presence of the black oxide, Cu^2O being taken as evidence that the copper was at some time melted in contact with air. This is eminently reasonable. The reviewer does not believe any Cu^2O or CuO (of the Cu^2O-Cu eutectic which is what is usually in question) has ever been positively identified in native copper from the upper peninsula. Although the nature of the hydrothermal solution which deposited the copper is unknown, thermodynamic calculations make the presence of Cu^2O in the copper very unlikely. So, if Cu^2O is positively identified, the copper has been molten in contact with air, since Pleistocene times as pointed out by Thompson (1958, p. 1) and Voce (1961, p. 70) quoted on page 173 of the volume under review. On the very next page is a quote from

McLeod (1945, p. 183) which shows an unacquaintance with modern commercial coppers. While it is true that there are several grades of commerial deoxidized copper on the market today which do not show Cu^2O, they are the product of quite sophisticated metallurgical control that no primitive people could reasonably be expected to practice. Hence, it is not an oversimplification to state that the metallurgist can always differentiate between copper which has been melted by a primitive people and unmelted native copper.

Another source of confusion is terminology, particularly involving such terms as "tempering" and "pure." In this day of highly specialized terminology, it is insufficient and even dangerous to accept Webster's definitions of technical terms. The only acceptable source of definitnons relating to metallurgical phenomena is the American Society for Metals handbook. Thus, the word temper, while sometimes used today to designate mechanical properties of nonferrous metals (viz. spring-temper brass) should now be restricted in use to the process of reheating hardened steel or cast iron for the purpose of relieving hardening stresses.

The most misused term is "pure." The question may well be asked, how pure is pure? The term pops up whenever chemical analysis of a copper artifact is reported. The term is largely relative, but should be defined either in relation to spectroscopic standards, percent, parts per million or undetected. This error of insufficient definition occurs throughout most of the analytical references quoted. Even two eminent metallurgists (Newton and Wilson 1942, p. 4, quoted on p. 761) are guilty of sloppy usage. The reviewer (Mack) has in his file some detailed spectographic analyses of copper from the Calumet and Hecla Copper Company in the Upper Peninsula. The analysis was made by the Geochemistry and Petrology branch of the Geologic Survey of the Department of the Interior. Impurity contents to the fourth decimal place are given for 28 elements, while 32 others were "looked for but not found." A detailed analysis such as this indicates that most reported spectrochemical analyses of copper artifacts are probably worthless. Thus, Tables 12-16 have no value, nor does much of Root's work contribute anything of value,

it being too incomplete. Trace element analyses such as shown in these Tables is hopeless.

The survey of the metallurgical and analytical sudies of "Lake Superior Copper and the Indians" has performed a valuable service. By collecting this published information, together with a discussion of the papers, Bastian has shown the confused state of such analytical endeavors which might not be apparent from a single paper. The reading of his paper has shown better than anything else, the urgent need for the establishment in the United States of such an organization as the Research Laboratory for Archeology at Oxford or the Documentation Center at the Technische Hochschule in Vienna.

David J. Mack (Professor, Metallurgical Engr.)
David A. Baerreis (Professor, Anthropology)
University of Wisconsin

BOOKS RECEIVED

Allegro, John Marco – THE TREASURE OF THE COPPER SCROLL. Anchor Books, Doubleday & Co., Inc., New York, 1964. Price $1.25.

Butcher, Benjamin T. MY FRIENDS THE NEW GUINEA HEADHUNTERS. Doubleday & Co., New York, 1964. Price $4.95.

Interesting Wisconsin Specimens

Old Copper Spearpoint. Found by Stanley Skirowski two feet below surface in cave, Adams Township, Adams County,

Unfinished Banner Stone. Found by Dennis Stanek at a depth of three feet, Milwaukee County. Note partially drilled hole.

ANNOUNCEMENT

We announce the republication of Volume 38, No. 4 of The Wisconsin Archeologist, THE OLD COPPER CULTURE OF WISCONSIN. This volume consists of six important articles on the Old Copper Culture and is a "must" for the library of anyone interested in Wisconsin archeology.

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ARCHAEOLOGICAL RESEARCH IN THE PROJECTED KICKAPOO RESERVOIR VERNON COUNTY, WISCONSIN

By
William M. Hurley
State Historical Society
of Wisconsin
1964

PREFACE

The Kickapoo Reservoir is part of the River Basin Survey's program of survey and salvage of archaeological remains from areas threatened with destruction from water impounded by dams built by the Corps of Engineers, Department of the Army, and the Bureau of Reclamation, Department of the Interior. The Kickapoo Reservoir will provide flood control in the Middle and Lower Kickapoo River Basin and will create a permanent recreation and conservation pool.

On March 2, 1963, the Department of the Interior, National Park Service, contracted with the State Historical Society of Wisconsin in order that the necessary archaeological survey and salvage within the Kickapoo Reservoir area might be initiated. This was done in accordance with PL-152, Federal Property and Administrative Service Act of 1949, Sect. 302 (c) (5), contract No. 14-10-0529-2732. All work was accomplished by students paid from the funds appropriated under the Interior Department Appropriation Act of 1962. Equipment for this work was supplied by the State Historical Society of Wisconsin. This report is submitted in partial fulfillment of the contract cited above.

I wish to acknowledge the help and encouragement of Dr. Joan E. Freeman, Anthropology Section, Museum Division, State Historical Society of Wisconsin, under whose direction this work was accomplished. Encouragement and assistance

in archaeological problems were offered by Dr. David A. Baerreis, Department of Anthropology of the University of Wisconsin.

I am indebted to the following crew members who accomplished the survey and testing with a high degree of competence and sincere interest: James Ellsworth, Stanley Hawkinson, Patrick Munson, Thomas Myers, William Wilson, Ann Wood, and Masakazu Yoshizaki.

I wish to acknowledge the aid and constructive suggestions of Mr. Donald L. Brockington, Department of Anthropology and Sociology of San Diego State College, who freely gave of his time and advice prior to this season' work. Mr. Brockington's previous experience in the Kickapoo Reservoir afforded valuable insights into the prehistory of the area.

Dr. Masakazu Yoshizaki, a visiting scholar from Japan, who is the Director of the Department of Archaeology of the Hakodate City Museum, Hokkaido, Japan, most graciously gave advice and technical aid in the field and the laboratory. The drawings he provided, figures 13, 14, 15, and 16, and the information offered on the burins, are valuable contributions to this report. Additional critical advice concerning the burins was offered by William Irving, Department of Anthropology, University of Wisconsin.

The citizens of La Farge and the Kickapoo Reservoir area, offered the members of this crew immeasurable aid and hospitality. Our work was accomplished during the height of the farming season, and we wish to thank the landowners who allowed us to survey and test in their fields. Private artifact collections were loaned to the State Historical Society by Mr. Henry Trappe, Mr. Dareld Hanson, Mr. Ray Frye, and Mr. Art Gillen. These collections have broadened our view of the space and time involved in the prehistory of the Upper Kickapoo Reservoir area.

I must acknowledge my special gratitude to my wife, Mary Hurley, who was an able assistant in the field. She, too, assisted in the preparation of this report by providing the burin drawings, figures 18 and 19.

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INTRODUCTION

The projected Kickapoo Reservoir will be located on the west fork of the Upper Kickapoo River in Stark and Whitestown Townships, Vernon County, Wisconsin. Vernon County is in the Western Upland region of the Driftless Area. The Western Upland region contains thoroughly dissected flat-topped divides with narrow steep-sided river valleys incised 300 to 400 feet below the general upland level. The upland, in the reservoir area, is capped by Ordovician Prairie du Chien dolomite which overlies the Upper Cambrian sandstone and siltstone formations. During the Pleistocene, the Kickapoo River established a dendritic pattern and entrenched itself into the sandstone formations. Later aggradation resulted in 50 to 125 feet of alluvial deposition above the Upper Cambrian bedrock. Soils adjacent to the alluvium are grey-brown podsolics and humid prairie loams.

The earliest cultural manifestations to appear in this ice free area are projectile points representative of the Early Paleo-Indian Period of circa 11,000 B. P. to 7,000 B. P. These points are of the Clovis variety, which are fluted by the removal of large longitudinal flakes from the face of the blade. Fluting is absent in the Midland and Plainview points which also occur during the Early Paleo-Indian Period. The Late Paleo-Indian Period, of circa 7,000 B. P. to 5,000 B. P., is best represented in the Upper Kickapoo Valley by Agate Basin, lanceolate, and concave base projectile point varieties.

These unfluted, lanceolate projectile points evidence superb workmanship in their fine flaking. Other lithic material recovered in the reservoir area representing the Paleo-Indian assemblages include: snubnosed end scrapers, single and multiple spurred scrapers, and flake artifacts. The lanceolate, basally ground, concave base projectile points of the Late Paleo-Indian Period overlap with side notched projectile points that are considered the hallmark of the Archaic Period (circa 5,000 B. P. to 3,000 B. P.). The Archaic Period is represented in the reservoir area by a regional fluorescence and continuum starting with the Oconto, Raddatz, Madison, and Osceola side notched projectile points. The Durst Stemmed projectile point (circa 3,500 B. P.) marks the end of the Archaic (Wittry, 1959a, p. 61) and continues into the

Early Woodland Period of circa 4,500 B. P. to 2,500 B. P. Diagnostic pottery for this period has not yet been found in the reservoir area, but grit tempered cord roughened ceramics belonging to the Early Woodland Period, Middle Woodland Period (circa 2,500 B. P. to 1,500 B. P.) or Late Woodland Period (circa 1,500 B. P. to 300 B. P.) have been recovered from twelve sites. The samples were encountered in the upper levels of the tested sites and are very limited in number. Survey and subsurface testing, therefore, indicates that prehistoric utilization in the reservoir area was either predominantly preceramic or non-ceramic. The reservoir area appears to become increasingly marginal to the rest of the state from the late Archaic to Historic times. Early missionaries and traders have left rich accounts of the areas peripheral to the Kickapoo Reservoir but no ethnohistoric data appear to exist for the reservoir area itself. Eighteen forty-four marks the first historic utilization and settlement of the valley.

During the 1963 field season, archaeological research in the (projected) Kickapoo Reservoir area was primarily concerned with the site reconnaissance and subsurface testing. A preliminary survey in 1960 resulted in the location of 25 archaeological sites. During 1961, four of these sites were tested and one additional site was located. An additional 132 archaeological sites were located during the ten week field season of 1963. This field season consisted of two segments: (1) four weeks of survey and limited testing, and (2) six weeks of site testing with limited survey. Of a total of 158 archaeological sites located, 121 are within an area that will be affected by dam construction. Forty-five of these sites have been tested; seventy-six sites remain to be tested.

Terms of the 1963 contract required the testing of previously located sites. Additional survey and limited testing was conducted as extensively as the funds permitted. The scope and extent of survey and testing were by necessity adjusted to the farming cycle in the Upper Kickapoo valley. Freshly planted crop land enabled the surveyors to locate 75 sites in the first ten days of the 1963 survey. As the surface became more overgrown, the results per day were not as rewarding.

Since dam construction for the Kickapoo Reservoir awaits further Congressional action, it will be possible to continue

survey operations and to test extensively before site innundation. Forty-five sites have been tested. They were tested only to an extent that permitted proper evaluation of their nature and archaeological value. In many cases this testing consisted of excavating one to four five-foot squares until sterile levels were reached. Certain features were left unexcavated and they await full scale site excavation. Thus, artifactual analysis is limited to surface collections and to artifacts recovered from subsurface testing. The analysis was augmented by four private collections on temporary loan to

FIG. 1: MAP 1. Location of the Kickapoo reservoir.

the State Historical Society of Wisconsin. Lack of excavation necessarily limits speculations and conclusions. The assemblages discussed in this report are, therefore, limited in

scope and tentative in nature. The problems and suggestions presented here will, hopefully, be sufficient to indicate direction for future work in the reservoir area.

RESERVOIR LOCATION AND CHARACTER

The proposed damsite will be located about 71.5 river-miles above the mouth of the Kickapoo River, approximately 2 river-miles upstream from the town of La Farge which is in Vernon County. The county lies in the southwestern portion of Wisconsin. (Fig. 1)

The dam will occupy a narrow portion of the Kickapoo River Valley where the closure will be made between the valley walls by construction of an earthen dam approximately 1,000 feet long. At the damsite the river flows in its channel at an elevation of approximately 800 feet above mean sea level. The dam will have a maximum height of 58 feet and will impound a pool with a maximum depth of 58 feet. Therefore, the maximum pool elevation will be 858 feet above mean sea level, while the proposed conservation pool elevation will be 822 feet above mean sea level. The maximum water level will extend upstream along the east fork of the Kickapoo, a distance of 18,5 river-miles, to the town of Ontario, Wisconsin. Extensions of one to two and one-half miles will extend up the tributary valleys containing Weister, Jug, Warner, and Billings Creeks. The proposed conservation reservoir will store approximately 800 acre-feet of water.

The mean annual rainfall for the Kickapoo River Basin above the damsite is within the range of 35 to 45 inches. The average snow depth is 42.4 inches.

GEOMORPHOLOGY

The Kickapoo Reservoir is located in the southwestern portion of Wisconsin. This region is within the Western Upland which is bounded by the gorge of the Mississippi River to the west; St. Croix County to the north; the Wisconsin-Illinois state line to the south; and the edge of the Driftless area to the east. The portion of the Western Upland extending from the La Crosse River to the Wisconsin River, which contains the reservoir area, is characterized by flat-topped divides that have been thoroughly dissected. The narrow and steep-sided river valley are incised 300 to 400 feet

below the general upland level which ranges between 900 and 1300 feet above sea level. The Western Upland represents the major portion of the Driftless Area; an area apparently never buried by glacial ice. The glacial advance of the Wisconsin in late Pleistocene times appears to have passed the Driftless Area by on one side or the other because of the broad high ground constituting the Western Upland (Finch, **et al.,** 1957(p. 257).

The Kickapoo Reservoir, in the eastern portion of Vernon County (Fig. 1), is characterized by hills with an average elevation of 1280 feet above sea level. The Kickapoo Valley, from LaFarge to Ontario, has strongly developed ". . . rock terraces which form the floor of the outer valley 400 feet deep and [up to] a mile in width, and below which the stream is incised 100 to 150 feet in large well developed meanders . . ." (Bates, 1939, p. 868). The valley floor is underlaid by alluvium ranging from 50 to 125 feet above bedrock as a result of river aggradation (**Ibid.**, p. 841). The reservoir area, apparently, did not serve as a drainage basin for the advancing glaciers or for the Glacial Lake Wisconsin. Alluvial aggradation in the reservoir during glacial times probably was the result of increased precipitation caused by the proximity of the glaciers, and valley erosion. (Martin, 1916, pp. 121-122).

GEOLOGY

The bedrock formations of the Western Upland and Driftless Aea are made up of nearly horizontal sedimentary rocks. These sedimentary rocks dip slightly to the southwest; away from the northern Precambrian formations. The widespread sedimentary formations are Upper Cambrian and Ordovician in age. The later Ordovician formation, in the reservoir area, comprises resistant layers of Prairie du Chien dolomite that cap the bluffs of the valleys. This dolomite is very cherty and contains several layers of sandstone. Beneath this Ordovician formation, lies a series of Upper Cambrian siltstone and sandstone. The first is Jordan-Trempealeau dolomitic siltstone and sandstone that varies in thickness from 50 to 100 feet. The sandstone may form slight benches on the hillsides. Under the Jordan-Thempealeau formations lies the dolo-

mitic Franconia sandstone that averages about 100 feet in thickness. The Franconia sandstone also forms benches that may be slightly terraced. The Kickapoo River is entrenched in the lowest of the Upper Cambrian sandstone formations, i. e., the Dresbach, which is up to 2000 feet in thickness (Thwaites, 1960, pp. 20-21). Weathering, erosion, and downcutting by the Kickapoo have exposed these formations as bluffs, terraces, fliffs, and benches.

TOPOGRAPHY

The upland surface adjacent to the Upper Kickapoo Valley ranges from gently rolling to rolling with ridges. The ridges vary in width from one-third to one mile. The alluvum in the steep-walled narrow valleys can be up to one-half mile wide, while in the narrower tributary valleys the alluvium is narrow and in strips. The differential resistance to erosion of the Ordovician and Upper Cambrian formations have resulted in the formation of benches and rock terraces within the river valleys. Aggradation of the present river channels, coupled with aeolian silt and sand deposition, tends to reduce the outlines of these terraces, which results in some difficulty in determining relationships of the various terraces to one another.

DRAINAGE

The Kickapoo River is the largest and simplest stream in the Driftless Area (Martin, 1916, p. 182). The river rises in Monroe County, near Summit and Wilton, where it is 992 feet above sea level. The river flows southwesterly in a dendritic pattern and degrades at an approximate rate of five feet per land mile. At its mouth, the Wisconsin River, the river is 644 feet above sea level. One and one-half miles above Readstown the river separates into an east and west fork. The east fork serves to receive Morris, Billings, Warner, Jug, Weister, and Bear Creeks. Heavy rainfall or sudden melting snow will cause these creeks to overflow their banks, resulting in minor to severe flood damage along the Kickapoo River basin.

SOILS

The main soils found in the proposed reservoir area are grey-brown podsilics and humid prairie soils of variable

thickness. Along the streams and drainage ways are found first-bottom soils that are poor to well-drained.

Feyehe, Boone, Hixton, Gale, and Bertrand soils represent the grey-brown podsolic group. The distinguishing features of this group are ". . . (1) deciduous hardwood vegetation; (2) relatively low content of organic matter in the surface soil; (3) an acid reaction and marked absence of the soluble salts throughout the main layers of the solum; and (4) an accumulation of iron and aluminum oxides at a depth of about 20 inches" (Edwards and Anderson, 1928, pp. 34-35). These light-colored silt-loams are productive soils but production is limited by their low organic content.

Hersh silt-loam is the humid prairie soil found in the reservoir area. This soil has a ". . . (1) grass or prairie vegetation; (2) high content of organic matter to a depth of 12 or 14 inches; and (3) an acid reaction and marked absence of the soluble salts throughout the main layers of the solum" (**Ibid.**, p. 35). Hersh silt-loam has a high organic content and is, therefore, the most fertile soil in the valley.

Genesee, Arenzville, and Huntsville constitute the first or overflow bottom soils. These recently deposited alluvial soils are derived from the sandstone, limestone, and loess in the drainage basins of the local streams. These soils are well adapted to utilization for grazing and, well drained, provide good agricultural yields. (**Ibid.**, pp. 41-42).

ETHNOHISTORY

In order to understand the ethnohistoric background of eastern Vernon County we must consider the immediately adjacent areas which have a rich history of Indian movement along the main waterways of the Fox - Wisconsin - Mississippi rivers. To the west of the reservoir area, after 1642, historical accounts show that the Mdewakonton Sioux regularly left their main village at Mille Lacs, Minnesota to hunt and trap deer, beaver, and buffalo, along the main rivers flowing into the Mississippi from the mouth of the St. Croix to the mouth of the Wisconsin. The Mdewakanton gathered wild rice and hunted fifteen to twenty miles eastward from the Mississippi on the numerous prairies that parallel the river (Shea, 1853, pp. 131, 133-138).

The Sioux established campsites and villages on both sides of the Mississippi and they traded large quantities of furs at a post at Trempealeau, Wisconsin. During this time no reference is made of their trapping southeast from the post into Vernon County. After 1783, the Sioux traded their furs and hides with the merchants at Prairie du Chien and continued their hunting on both sides of the Mississippi, until the close of the English sovereignity (circa 1816) in the Upper Mississippi region, when the Sioux became less dependent upon the scarce Wisconsin game as their main source of food. The Mdewakanton occupancy of Wisconsin officially came to a close with the signing of the Treaty of September 29, 1837, at Prairie du Chien.

The Wisconsin River flows into the Mississippi south of the city of Prairie du Chien. This city was an important center both for the Sioux and the Indian tribes of interior Wisconsin. The Wisconsin River is connected to the Fox River via a three mile portage. The Fox in turn serves as a connection with Lake Michigan at Green Bay. The area north of the Wisconsin and southwest of the Fox (Royce Area 245), ". . . was unoccupied at the time of first White contact . . ." (Jones, J., n. d., p. 8). According to Jones (p. 8), "The Fox Indians controlled traffic on the Wisconsin to some extent through occupancy of the area around the Fox-Wisconsin portage. . . . During the 1730's, after trouble with the French, the Fox and their ally the Sac, moved . . . to the lower Wisconsin River." They controlled this region until the 1780's, ". . . when fear of the Chippewa on the upper Wisconsin caused the Sac and Fox to abandon their villages and move permanently to the Mississippi region" (**Ibid.**, p. 8).

The Menomini and the Chippewa competed with the Sioux for control in northern Wisconsin throughout the 17th and 18th centuries and became successful in driving the Sioux out of the northern area in the early 19th century. The Kickapoo and Mascouten tribes inhabited southeastern Wisconsin from the Fox to the Rock Rivers, the latter at one time being named the 'Kickapouz' River. The most accurate reference to the actual Kickapoo River was made by Daniel Coxe who described a ". . . 'River of the Kikapouz' sixty miles up the Wis-

consin river from the Mississippi and mentions the 'Kikapouz' [tribe] . . . as west of Lake Michigan" (Silverberg, 1957, p. 88). They ranged ". . . westward along the Mississippi River in an area from central Wisconsin to Central Illinois to combat various Siouan tribes" (**Ibid.**, p. 95).

The use and occupancy of the area north of the Wisconsin River and southwest of the Fox River, appears to have been restricted to extensive use of the waterways with limited use of the area for hunting and as a refuge in time of war. Jones, in his anthropological report on the Indian occupancy of this area (Royce Area 245), concludes his study with the statement ". . . there is no evidence to show that any groups, Winnebago, Chippewa, Sac, Fox, or Sioux, ever exploited the resources of the interior of Area 245 [within which the reservoir area is included], and no land use claims could be maintained by any tribe for that territory" (p. 179).

HISTORY

The territory now included within the limits of Vernon County was originally a part of Crawford County. In 1852, the Wisconsin State Legislature approved the formation of the new county and designated that its name be Bad Ax. Bad Ax refers to the pricipal river which rises within the county limits and which was the scene of the final battle of the Black Hawk War in 1832. The name Bad Ax proved to be unpopular and in 1862 the county name was officially changed to Vernon.

Actual settlement of Vernon County began in 1844, two hundred years after initial European penetration of the state. In 1844, John McCullough took up residence near the town of Liberty Pole. By 1847, the population of the county had increased to 223. The townships of Stark (T13N, R2W) and Whitestown (T14N, R2W), where the reservoir will be located, were settled in 1853. Settlement of the county was rapid, and by 1855 the population of the county was about 4800.

SURVEY AND TESTING

Survey and testing of archaeological sites within the reservoir area was conducted by employees of the State Historical Society of Wisconsin. Landowners and townspeople were

interviewed to ascertain if they or others had found artifacts on their land or if they had knowledge of prehistoric or historic Indian sites within the reservoir area. Actual survey was accomplished with the aid of plat books, topographic maps, prepared field maps, and United States A. S. C. air photographs. Permission was granted to walk over all fields under cultivation. Pastures, swamps, and mixed timber areas were surveyed for indications of surface refuse, earthworks, rockshelters, or caves. Fields that were harvested or recultivated were checked for further evidence of prehistoric occupation. During site testing operations, adjacent areas were resurveyed and suspected site locations, i. e. pastures, underwent subsurface testing. All sites in and immediately adjacent to the reservoir were mapped on individual site sheets, master survey sheets, topographic maps, and on air photographs. Wherever possible, sites were places within the confines of 100 square yards of a quarter quarter-section. Surface collections were washed, marked, catalogued, and evaluated for their archaeological value.

During the last week of July and the first week of August, 1960, A. Dewey Buck, Jr. and William H. Wilson undertook a preliminary archaeological survey of the Kickapoo Reservoir area. A total of twenty--five archaeological sites were located during this survey. Of these, 20 are completely or partially within the maximum pool of the reservoir.

Between July 11 and 22, 1961, Donald L. Brockington directed testing operations at four of the sites found during the 1960 survey. Three of the sites were recommended for excavation as well as an additional site, a conical mound, that was located during the course of the 1961 season.

A total of 132 sites were located and recorded during the survey undertaken by the author for the State Historical Society of Wisconsin from June 17 to August 30, 1963. Of these 132 sites, 32 are outside the reservoir area. The major river valley and tributary valleys were fully surveyed. Although a large number of sites have been recorded within the reservoir area, it is important to point out that additional sites were located during all phases of our work and that many areas of suspected sites still await survey and subsurface

testing. Four-fifths of the projected Kickapoo Reservoir and immediately adjacent areas have been surveyed. This survey included the reservoir area, projected conservation recreation areas, and areas that will be directly affected by state and county highway relocation.

Prior to the survey of 1960, Vernon County and the Upper Kickapoo Valley were virtually unknown archaeologically. Twenty-five sites had been recorded and briefly described for Vernon County. One report of archaelogical excavation in western Vernon County has been published (McKern, 1931), and substantial archaeological work has been done on areas peripheral to Vernon County and the Kickapoo River Valley, i.e, McKern, 1931, 1945; Wittry, 1959a, 1959b; Freeman, Mss in preparation; Brandon, Mss in preparation; and Hurley, Mss in preparation. Site reports on the 158 additional sites found so far, will be a valuable contribution to Wisconsin archaeology.

The four archaeological sites tested in 1961 were open sites. During the 1963 field season, forty archaeological sites were tested. Sixteen were rockshelters and twenty-four were open sites. Permission was granted in every case to test these sites. In many instances the sites were planted in alfalfa or oats, and the landowners were most generous in allowing testing which often proved to be extensive. After permission was secured, the sites were laid out in a grid system that seemed most appropriate for each. Site plan maps were then made, showing the location of a permanent bench marker, grid squares excavated, topography, and additional information that was particular to the site. Soil profiles were made and soil samples were collected. All sites were tested by digging five-foot square in levels of .5 feet or according to natural stratigraphic levels. All levels and features were excavated by troweling or the fill was screened through quarter inch mesh. At field headquarters in La Farge, Wisconsin, the material was washed and catalogued.

There are now (January, 1964) 121 archaeological sites within the maximum pool of the reservoir, projected conservation recreation areas, and areas that will be directly affected by state and county highway relocation. Subsurface

testing is the only method of gaining an idea of the depth, extent, and the nature of these sites. Some sites that had extensive refuse on the surface were discovered to be only as deep as the plow zone, while other sites proved to have greater depth of undisturbed deposit.

Testing does not imply site excavation. In many instances one to three five-foot squares are sufficient to evaluate properly a "good" site. It is the illusive or "poor" site that requires numerous squares. Probing, with a steel rod, in rockshelters is not a sufficient indicator of soil depth. Ceilings and walls fall at certain intervals and the probe may hit these or other rocks. In one case, after probing, we believed a shelter to be less than two feet in depth but with testing it was disclosed that soil depth exceeded four feet. Of a total of 121 known archaeological sites within the reservoir, 45 have been tested. There remain 76 sites to be tested and evaluated.

On the basis of surface collections, sites were recommended for testing. On the basis of testing, sites are recommended for excavation.

Site designations used here are binominal, consisting of symbols for county and site. County is designated by a two-letter abbreviation; for example, Ve refers to Vernon County. The number refers to a specific site within the indicated county; thus Ve-1 indicates the first site recorded for Vernon County. (Codification cards are prepared for each site and are placed within the reference files of the Museum of the State Historical Society of Wisconsin and the Anthropology Department of the Milwaukee Public Museum). Sites are recorded here, for reasons of clarity, in the following manner: Trappe Site I, Ve-26. Trappe indicates the landowner's name. The succeeding number (I) indicates one of several sites on Mr. Trappe's property.

In the following pages all sites will be listed according to landowner and number. Sites will be treated in order proceeding from damsite and continuing northward. In order that further continuity and interrelationships among sites may be maintained, the reports submitted to the National Park Service after the field seasons of 1960 and 1961 will be in-

corporated into the body of this report. Sites located during those seasons were tested in 1963.

Archaeological sites in the Kickapoo Reservoir are further designated in the following manner: campsites, worksites, villages, rockshelters, caves, mounds, and petroglyphs. The distinction between campsite, worksite, and village, of course, can only be ascertained after testing. We have followed the method urged by Howard D. Winters (1963, p. 4)

> "With respect to site recording, we urge the location and description of all areas which show signs of prehistoric activity. In terms of the solution of archaeolog ical problems, a simple gathering camp, with its numerous manos, metates, and little else, is quite as important as a large village with its often thin and mixed cultural deposits left by thousands of years of occupation.
>
> We also urge the division of seeming continuous occupation areas into small units on the basis of natural features such as knolls or simple arbitrary units. Such divisions of the site often reveal areas assignable to quite different cultural manifestations or activities."

STARK TOWNSHIP (T. 13 N., R. 2 W.) (Fig. 2, Map 2)

Renkins Site I (Ve-72) is located in the SE-SW-SE-NW-NE ¼ of Section 20, T1, 3N, R2W on a high terrace above the Kickapoo River in a garden immediately NW of the Renkin house. Material is confined to an area 50' by 50'. The site appears to be a campsite. The site is within the projected conservation recreation area. One Snyders projectile point (Fig. 7, No. 8), two bone fragments, and six chert fragments were recovered from the surface.

Trappe Site I (Ve-26) is located in the SW ¼ of Section 16, T1 3N, R2W on the south bank of a small tributary of the Kickapoo River. One projectile point and blade fragment were found in a small eroded area next to a hay field. The site is probably located in this field but this could not be determined during the survey (Buck and Wilson, 1960).

Trappe Site II (Ve-61) is located in the SW-SE-SW-SW-SW ¼ of Section 16, T1 3N, R2W, 1000' south of Trappe Site I (Ve-26) on top of a ridge. Material is confined to an area approximately 150' by 50' and is apparently a field. Seven chert flakes were found in this area.

Trappe Site III (Ve-62) is located in the SE-NW-SW-SW ¼ of Section 16, T1 3N, R2W, on a slightly sloping ridge northeast and above the Trappe house. The site is on the

KEY TO FIG. 2, MAP 2; Kickapoo Reservoir area, showing locations. The proposed damsite will be located in the S ½ of the NW ¼ of Section 21, Stark Township (T. 13 N., R. 2 W.). Squares indicate township sections. Heavy black lines indicate the Kickapoo River and its tributary creeks. Roads are indicated by solid or broken double lines. Lighter black lines parallel to the river, creeks, and valleys represent the 858 foot contour interval which marks the limit of the maximum pool. The larger numbers are section numbers while smaller numbers designate site locations.

southern edge of a field. Three five foot test squares were excavated to a depth of .7' (plow zone) and an apparent sterile red clay was encountered. The following objects were recovered from this campsite:

Prehistoric objects:

1 Corner-notched projectile point
1 Corner-notched projectile point base
1 Implement fragment
21 Chert flakes
70 Chert fragments

In view of the fact that the above material was recovered from the plow zone, it is recommended that Trappe Site III undergo no further testing or excavating.

Trappe Site IV (Ve-63) is located in the NE-SW-NE-NW-NE ¼ of Section 20, T1 3N, R2W, on a low sandy terrace 100 yards north of the Kickapoo River. Material is confined to an area approximately 200' by 50' along the top of the terrace. The site appears to be a campsite. The following material was recovered from the surface:

Prehistoric objects:

1 Burin (Fig. 6, No. 31 and Fig. 19, No. 1)
45 Chert flakes
15 Chert fragments

Historic objects:

4 fragments

Trappe Site V (Ve-64) is located in the NE-SW-NE-NW-NE¼ of Section 20, T13N, R2W, on a low sandy terrace 100 yards north of the Kickapoo River and 100 yards east of Trappe Site IV (Ve-63). Material is confined to an area approximately 100' by 50' on the top of the terrace. The site appears to be a small campsite. Six chert flakes and five chert fragments were recovered from the surface.

Trappe Site VI (Ve-65) is located in the SW-SE-SW-NE-NW-NE ¼ of Section 20, T1 3N, R2W, fifty yards north of the Kickapoo River and 50 yards S-SW of VE-64. The site is confined to a low sandy ridge 100' by 50'. One

implement fragment, one worked flake, and twenty chert flakes were recovered from the surface. This site appears to be a small campsite.

Trappe Site VII (VE-66) is located in the center of the NW-NE-NE ¼ of Section 20, T1 3N, R2W, on a series of low parallel ridges 50 to 150 yards north of the Kickapoo River. The site is 500' by 200'. The following material was recovered from the surface of this campsite:

Prehistoric objects:

1 Durst Stemmed Projectile point
1 Side scraper
1 End scraper
1 Worked flake
20 Chert flakes
7 Chert fragments

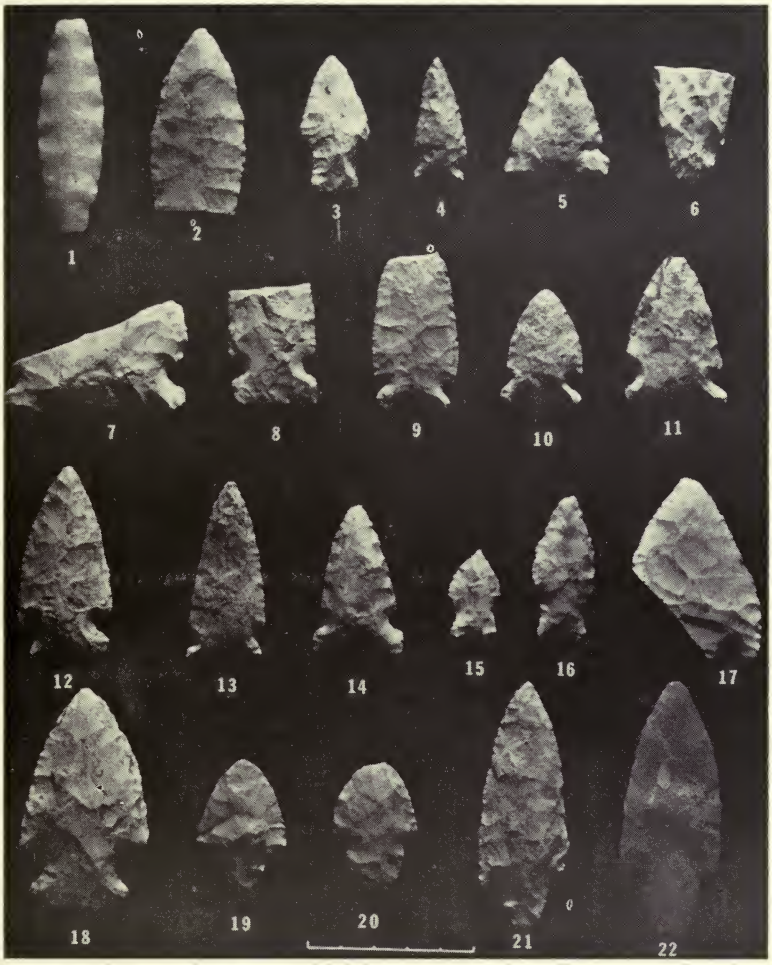
Historic objects:

2 Fragments

Trappe Site VIII (Ve-182) is located in the NE-NE-NW-NW¼ of Section 21, T13N, R2W, 100 yards east if Ve-61 in a field on the first rise on top of the first terrace of the Kickapoo River. This campsite is 100' by 75' and ten chert flakes were recovered from the surface.

Trappe Site IX (Ve-183) is located in the NE-NE-NE-NW¼ of Section 21, T13N, R2W, on top of the second terrace of the Kickapoo River Valley and approximately 300 yards east of Ve-182 near the tree line. This campsite is approximately 75 yards square and Mr. Trappe has reported finding numerous projectile points on the surface.

The lithic artifacts in Figure 3, Fig. 13 No. 8, and Fig. 14 No. 8 were loaned by Mr. Trappe to the State Historical Society of Wisconsin and will be commented upon in the section dealing with the archaeological chronology of the Upper Kickapoo Valley. This material is designated VE-62-0; the O sanding for owner, in order that loaned collections might be catalogued and be returned to their proper owner.



KEY TO FIG. 3. Lithic artifacts from the Trappe collection (Ve-62-0); (Scale is 5 cm.; artifacts approx. two-thirds natural size).

1. Lanceolate projectile point, collaterally flaked, uartzite, Ve-62-O-S-52.
2. Distal fragment of Plainview projectile point, grey chert, Ve-62-O-S-111.
3. Expanding stem projectile point, chert, Ve-62-O-S-16.
4. Side-notched projectile point, chert, VeV-62-O-S-70.
5. Oconto side-notched projectile point, Ve-62-O-S-60.
6. Primary burin, distal implement fragment, chert, (See Fig. 19). Ve-62-O-S-172.
7. Oconto projectile point fragment. chert, Ve-62-O-S-42.
8. Raddatz side-notched projectile point, chert, Ve-62-O-S-69.
9. Corner-notched projectile point, chert, Ve-62-O-S-84.

10. Corner-notched projectile point, chert, Ve-62-O-S-89.
11. Oconto projectile point, chert, Ve-62-0-S-58.
12. Corner-notched projectile point, chert, Ve-62-0-S-40.
13. Corner-notched projectile point, chert, Ve-62-O-S-54.
14. Side-notched projectile point, chert, Ve-62-O-S-74.
15. Stemmed projectile point, chert, Ve-62-O-S-20.
16. Durst Stemmed projectile point, chert, Ve-62-O-S-15.
17. Snyders projectile point fragment, chert, Ve-62-0-S-42.
18. Corner-notched projectile point, chert, Ve-62-O-S-38.
19. Contracting stem projectile point, chert, chert, Ve-62-O-S-37.
20. Contracting stem projectile point, chert, Ve-62-O-S-36.
21. Contracting stem projectile point, chert, Ve-62-O-S-30.
22. Contracting stem projectile point, quartzite, Ve-62-O-S-29.

Ja Daul Site I (Ve-70) is located in Section 20, T1 3N, R2W. This village site is outside the reservoir area.

Ja Daul Site II (Ve-71) is located in the NE-NE-SW-SE-SW ¼ of Section 17, T1 3N, R2W, at the head of a large gully 350 yards north of the house occupied by the tenant, James DeWitte. This rockshelter faces the northeast but is protected in front by a small hill. The rockshelter is 60' long, 5' to 10' high, 30' of overhang, and up to 4' of soil deposit. No artifacts were recovered from the surface.

Brown Site I (Ve-27) is located in the SW ¼ of the SE ¼ of Section 17, T13N, R2W, on a sandy ridge on the first terrace of the Kickapoo River. Material is confined to an area approximately 300' by 75 along the top of the ridge. The site appears to be a village site. The following material was recovered from the surface of this site:

Prehistoric objects:
2 Projectile points
2 Projectile point fragments
4 Blade fragments
3 Implement fragments
1 Grit tempered cord marked body sherd
69 Chert flakes (Buck and Wilson, 1960).

Hagen Site I (Ve-28) is located in the SW ¼ of the NE ¼ of Section 17, T13N, R2W, on the edge of the first terrace of the Kickapoo River. Only one implement fragment and 19 chert flakes were recoverd from an area approximately 100' by 50', indicating that the site may be a small campsite (Buck and Wilson, 1960).

Hagen Site II (Ve-67) is located in the NE-NE-SW-NW-SE ¼ of Section 17, T13N, R2W, on a sandy terrace 150 yards S-SW of the Hagen barn and 150 yards west of STH

131. The site is confined to an area approximately 110' by 50' along the top of the terrace. The site appears to be a campsite. Three chert fragments and fourteen chert flakes were recovered from the surface.

Hagen Site III (Ve-68) is located in the NE-NW-SW-NW-SE ¼ of Section 17, T13N, R2W, on a sandy terrace 200 yards west of STH 131. The site is confined to an area 100' by 50' along the top of the terrace. This campsite yielded nine chert flakes and two large chert fragments from the surface.

Hagen Site IV (Ve-69) is located in the NW-SE-NW-NW-SE ¼ of Section 17, T13N, R2W, on a sandy terrace on the southern edge of an artificial farm pond. Material is confined to an area 250' by 75' along the terrace. The following material was recovered from the surface:

Prehistoric objects:
- 1 Corner-notched projectile point
- 5 Knife fragments
- 2 Worked flakes
- 48 Chert flakes

Historic objects:
- 2 Fragments

Hill-Davidson Site 1 (Ve-138) is located in the SE-NE-SE-NW ¼ of Section 17, T13N, R2W, on the west side of the Kickapoo River at the base of the bluff ½ mile south of town road. This site is a rockshelter 300' long, 7' high, with a 2' overhang, and over 4' of soil deposit. No artifacts were recovered from the surface.

Hanson Site I (VE-48) is located in the SW¼ of the SW ¼ of Section 8, T13N. R2W. This group of four bird petroglyphs is located on a sandstone bluff near the top of a large ridge overlooking the Kickapoo River Valley. The four bird figures were reported in **The Wisconsin Archeologist**, Vol. 41, No. 4, December, 1960, pp. 98-101 by A. Dewey Buck, Jr. and William H. Wilson.

Hanson Site II (Ve-167) is located in the NE-SE-NE-NW-NW ¼ of Section 17, T13N, R2W, in Spring Valley. The site is at the end of the farm lane. Six five-foot test squares were excavated on a north-south line. The site is on the flood plain of a small creek that flows eastward to the

Kickapoo River. The soils are a brown sand plow zone, 1.0' in depth; mottled brown sand, .5' in depth; mottled yellow-brown sand, .5' in depth; and mottled yellow sand, .7' in depth. Below at a mean depth of 2.7' the yellow sand is apparently sterile. Surface collections yielded the following material: 1 Clovis projectile point (Fig. 13, No. 1 and Fig. 14, No. 1), one thumbnail scraper, one knife, one knife fragment, and 25 chert flakes. The following objects were recovered from the testing operations:

Prehistoric objects:
- 1 Projectile point fragment
- 2 Chert cores
- 1 Scraper
- 1 Worked flake
- 50 Chert flakes
- 50 Chert fragments
- 15 Animal bone fragments

Historic objects:
- 6 Porcelain fragments
- 3 Glass fragments
- 2 Nails

The two feet of deposit at this probable Paleo-Indian campsite seems to warrant the recommendation that this site undergo extensive excavation.

Hanson Site III (Ve-137) is located in the SE-SW-SE-NE-NW ¼ of Section 17, T13N, R2W, at the head of the first small hollow south of the lane to Hanson's house on the west side of the Kickapoo River. This rockshelter is 100' long, 5' to 7' high, with 15' of overhang, and 2' of soil deposit. One five-foot test square was placed in the center of this rockshelter and excavated to a depth of 2'. The rockshelter was found to be sterile and is not recommended for excavation.

Schroeder Site I (Ve-29) is located in the SW ¼ of the SW ¼ of Section 9, T13N, R2W, on the first terrace of the Kickapoo River approximately 200' north of the river. The site is confined to a long sandy ridge 100' by 50' in the northwest corner of a field. Four five-foot test squares were excavated on an east-west line. A fire pit was located at a depth of 1.2 feet below the ground surface, below the plow zone which was .6' deep, and below a striated level, .6 feet deep, which contained bits of charcoal. This striated level immedi-

ately below the plow zone contained most of the few materials found at the site. The following objects were recovered from the testing operations:

Prehistoric objects:
25 Chert flakes
1 Piece of yellow ochre
Bone fragments
Charcoal fragments

Is is recommended that excavations be undertaken at this site. The fireplace and indications of occupation suggest that Schroeder Site I is worthy of future work.

Schroeder Site II (Ve-30) is located in a small field in the SE ¼ of the SE ¼ of Section 8, T13N, R2W. A possible burial mound measuring fourteen by seven feet and one and one-half feet high was located in the center of the field. Schroeder Site II is recommended for excavation (Brockington, 1961).

M. Hopkins Site I (Ve-126) is located in the NE-SW-SE-NW-SW ¼ of Section 9, T13N, R2W. It is north of the Kickapoo River and NW of STH 131. The site is a rockshelter 100' long, 8' to 15' high, with a 6' overhang. and 1' to 3' of soil deposit. No artifacts were recovered from the surface.

M. Hopkins Site II (Ve-127) is located in the NE-NE-SE-NW-SW ¼ of Section 9, T13N, R2W, on the north side of the Kickapoo River and NW of STH 131. This site is a rockshelter 25' long, 10' high, with a 6' overhang, and 1' of soil deposit. One five-foot square was excavated to a depth of 1' and found to be sterile. This rockshelter is not recommended for excavation.

M. Hopkins Site III (Ve-128) is located in the NE-NE-SW-NE-SW ¼ of Section 9, T13N, R2W. It is northwest of the Kickapoo River and STH 131. The site is a rockshelter 100' long, 25' high, with a 2' overhang, and 1' to 4' of soil deposit. No artifacts were recovered from the surface.

M. Hopkins Site IV (Ve-129) is located in the NE-NW-NE-NW-SE ¼ of Section 9, T13N, R2W, and is east of the Kickapoo River and STH 131. The site is a rockshelter 15' long, 6' high, with a 4' overhang, and 1' of soil deposit. One five-foot square was excavated to a depth of 1' and was ster-

ile. This rockshelter is not recommended for excavation.

M. Hopkins Site V (Ve-169) is located in the S ½-NE-NE-SW ¼ of Section 9, T13N, R2W, on the first terrace of the Kickapoo River, ¼ mile west of STH 131 and 100' south of the farm road. This village site is 500' by 500' and the last tenant, Mr. Carl Vitcenda of Ontario, has loaned his surface collection (Fig. 4; Fig. 13, No. 3; and Fig. 14, No. 3) to the State Historical Society. This collection will be commented upon in the section dealing with the archaeological chronology of the Upper Kickapoo Valley.

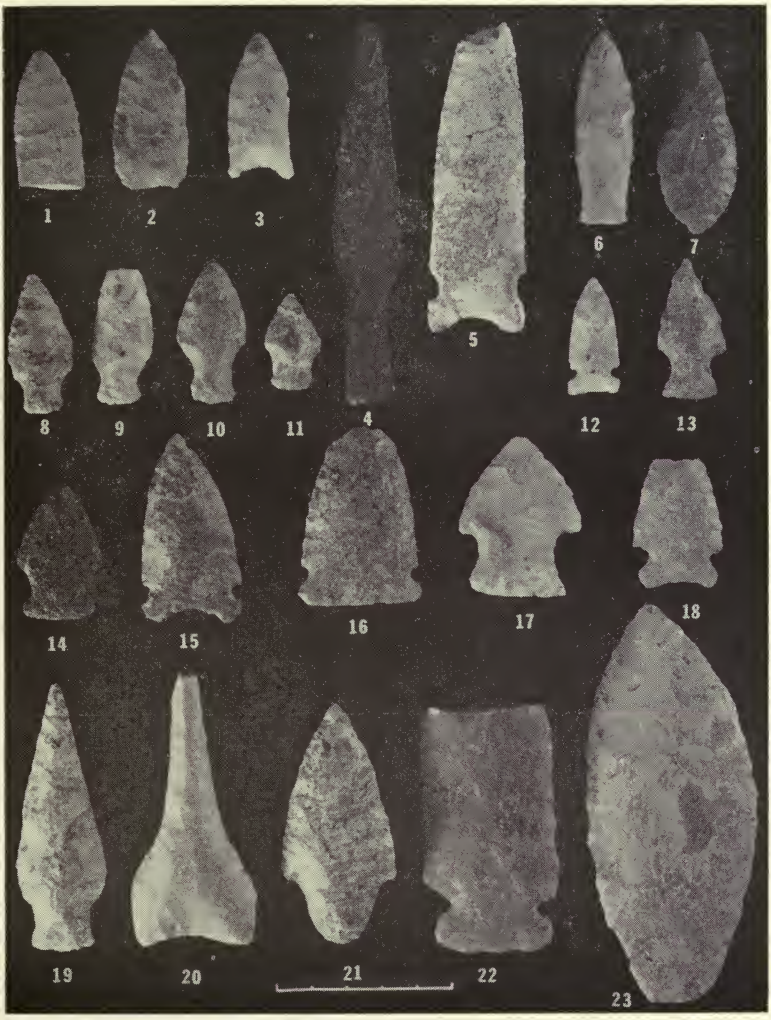
M. Hopkins Site VI (Ve-175) is located in Section 9, T13N, R2W. This rockshelter is outside the reservoir area.

Barclay Site I (Ve-73) is located in the NW-SE-SW-SW-NE ¼ of Section 9, T13N, R2W, on a low sandy terrace 25 yards NW of the Kickapoo River, immediately west of STH 131 bridge. The site is confined to an area approximately 100' by 50', and appears to be a small campsite. Ten chert flakes and two quartzite flakes were recovered from the surface.

Barclay Site II (Ve-74) is located in the SW-SW-NW-SW-NE ¼ of Section 9, T13N, R2W, on the east side of STH 131, and 25 yards north of the farm barn. The site is confined to an area approximately 100' by 75'. This campsite yielded one knife fragment, one worked flake, and four chert flakes from the surface.

Kaukl Site I (Ve-31) is located in the SE ¼ of the NW ¼ of Section 9, T13N, R2W. Preliminary surveys suggested that the site extended on an unplanted terrace towards the nearby Kickapoo River. On this unplanted terrace three test squares were excavated. In addition, two areas measuring 20' by 30' and 15' by 10' were cleared of topsoil to ascertain the extent of structures mentioned below. Materials and objects recovered include the following:

Prehistoric objects:
- 65 Chert and quartzite flakes
- 1 Chert implement fragment
- 1 Red ochre fragment
- 1 Grit tempered cord marked body sherd
- Bone fragments
- Charcoal fragments



KEY TO FIG. 4. Lithic and copper artifacts from the Vitcenda collection (Ve-169-O); (Scale is 5 cm.; artifacts approx. two-thirds natural size).

1. Distal fragment of Plainview projectile point, grey chert, Ve-169-O-S-13.
2. Lanceolate projectile point, pink chert, Ve-169-O-S-8.
3. Concave base projectile point, pink chert, Ve-169-O-S-3.
4. Socketed copper projectile point, type I-A1, Ve-169-O-S-96.
5. Osceola projectile point, chert, Ve-169-O-S-122.
6. Stemmed projectile point, chert, Ve-169-O-S-30.
7. Stemmed projectile point, grey chert, Ve-169-O-S-37.
8. Durst Stemmed projectile point, chert, Ve-169-O-S-23.

9. **Durst Stemmed projectile point, chert, Ve-169-O-S-21.**
10. **Durst Stemmed projectile point, chert, Ve-169-O-S-20.**
11. **Stemmed projectile point, chert, Ve-169-O-S-29.**
12. **Side-notched projectile point, chert, Ve-169-O-S-112.**
13. **Expanding stem projectile point, chert, Ve-169-O-S-52.**
14. **Side-notched projectile point, quartzite, Ve-169-O-S-129.**
15. **Oconto projectile point, chert, Ve-169-O-S-128.**
16. **Oconto projectile point, chert, Ve-169-O-S-107.**
17. **Expanding stem projectile point, chert, Ve-169-O-S-47.**
18. **Corner-notched projectile point, chert, Ve-169-O-S-51.**
19. **Stemmed projectile point, chert, Ve-169-O-S-15.**
20. **Drill, chert, Ve-169-O-S-87.**
21. **Contracting stem projectile point, chert, Ve-169-O-S-32.**
22. **Side-notched projectile point, quartzite, Ve-169-O-S-109.**
23. **Bifacial knife, chert, Ve-169-O-S-84.**

Historic objects:
1 Iron bolt

Two sets of wall trenches and post holes were encountered. Their presence indicated that two prehistoric structures existed at Kaukl I. The wall trenches and post holes were excavated.

The Kaukl Site I soil occurs in three distinct levels. The humus layer is dark sandy clay about .8 feet in depth. Below this is a light brown sandy clay that differes sharply in color from the humus and therefore permits one to easily distinguish the dark marks left by posts and wall trenches. At a mean depth of 1.5 feet is found a reddish clay soil which is apparently sterile. The definition of post holes is made difficult by the fact that a lug wheeled tractor was used on the farm in the past. The lug marks resemble post molds and give the superficial appearance of a great multiplicity of post holes.

The paucity of artifacts does not permit any confident cultural placement of Kaukl Site I, except for the single sherd which would be Woodland.

The area where the site is found between the Kickapoo River and the corn field is about 450' long and 75' wide.

In view of the presence of the structural remains and the rarity of such remains in Wisconsin, it is recommended that extensive excavation be undertaken at Kaukl Site I. It is further recommended that earth moving equipment be used to remove the topsoil and locate possible structures and refuse pits (Brockington, 1961).

Kaukl Site II (Ve-32) is located in the NW-SE-SW-NE-

NW ¼ of Section 9, T13, R2W, on the first terrace north of the Kickapoo River and next to CTH "P." Eight five foot test squares were excavated along the southern and western edges of the terrace. Almost all artifacts were recovered within the first foot of soil. The soil consists of a plow zone .7 feet deep, an occupation zone .5 feet deep, and at a mean depth of 1.2 feet is found a reddish clay soil that is apparently sterile. One feature was excavated and it contained fire-cracked rocks and flakes. The following objects were recovered during the testing operations:

Prehistoric objects:
- 1 Raddatz Side-notched projectile point (Fig. 6, No. 9)
- 1 Expanding stem projectile point (Fig. 6, No. 7)
- 3 Knives
- 4 Worked flakes
- 1 Implement fragment
- 26 Quartzite flakes
- 198 Chert flakes
- 55 Chert fragments

The area where this campsite is found is approximately 100 feet square. It is suggested that further excavations be undertaken with earth moving equipment to remove the plow zone and locate possible refuse pits.

Kaukl Site III (Ve-33) is located in the SE ¼ of the SW ¼ of Section 4, T13N, R2W, on the lower slope of a ridge approximately 1000 feet east of the Kickapoo River. Three five-foot test squares were dug in an area to the west and south of the ridge. In all the following objects were recovered:

Historic objects:
- 1 Clay pipe
- 43 Metal fragments
- 2 Shell fragments
- 3 Bone fragments

Kaukl Site III is adjacent to the farm lane and approximately 400 feet north of the farm buildings. This area is subject to severe deposition and has been used as a modern midden area. The test squares were dug to a depth of three feet and the profiles indicated sheet deposition. In view of the fact that no prehistoric artifacts were recovered, it is recommended that there should be no further work at Kaukl III.

Kaukl Site IV (Ve-34) is located in the SE-NE-NW-SE-SW ¼ of Section 4, T13N, R2W, on a long sand ridge on the edge of the first terrace south of the Kickapoo River. Nine five foot test squares were dug from the center of the ridge along a north-south line, and along an east-west line. The soil consists of: .8' plow zone, .5' yellow sandy clay, and at a mean depth of 1.3' is found a reddish clay soil apparently sterile. The .5' yellow sandy clay zone appears to be the occupation zone. The following objects were recovered:

Prehistoric objects:
- 1 Side-notched projectile point (Fig. 6, No. 10)
- 1 Burin (Fig. 6, No. 11 and Fig. 18, No. 2)
- 2 Projectile points
- 3 Knives
- 6 Implement fragments
- 1 Worked flake
- I Core
- 214 Chert flakes
- 22 Chert fragments
- 10 Granitic fragments

It is recommended that excavation be undertaken at Kaukl Site IV. The test squares indicate a thin occupation zone that appears to extend along the northern portion of the ridge. A checker-board of five-foot squares along this ridge should yield the important information concerning the occupation of this campsite.

Kaukl Site V (Ve-35) is located in the NE-NE-NE-SE-SW ¼ of Section 4, T13N, R2W, on the first terrace south of the Kickapoo River and approximately 300 yards east of Kaukl Site IV (Ve-34). The site is on a rise 200 feet square. Five five-foot test squares were dug along a north-south line on the crest of the rise. The soil consists of a plow zone .7' deep, an occupation zone of .5' and at a mean depth of 1.2' is found a reddish clay that is sterile. The following objects were recovered from the site:

Prehistoric objects:
- 1 Scraper
- 2 Implement fragments
- 137 Chert flakes
- 5 Chert fragments

The area of concentration appears to be a 75' square area along the southern portion of the ridge. A checker-board of

five-foot squares in this area should yield the necessary information concerning this campsite. It is recommended that further excavations at Kaukl Site V be undertaken.

Kaukl Site VI (Ve-47) is located in Section 4, T13N, R2W. This conical mound is outside the reservoir area.

Kaukl Site VII (Ve-134) is located in the NW-SW-SW-NE-SW ¼ of Section 4, T13N, R2W, at the base of the bluff on the north side of the Kickapoo River. This site is a rockshelter 100' long, 15' to 18' high, with a 10' overhang, and over 4' of soil deposit. This rockshelter faces south. No artifacts were recovered from the surface.

Kaukl Site VIII (Ve-165) is located in the NE-SE-SW-NE-NW ¼ of Section 9, T13N, R2W, on the first terrace adjacent to and south of CTH "P" and STH 131. This campsite is 150' by 80'. Five five-foot test squares were dug along an east-west line on top and center of this rise. The soil consists of a plow zone .8' deep, an occupation zone .5' deep, and at a mean depth of 1.3' is found a reddish clay soil that is sterile. The following objects were recovered from the site:

Prehistoric objects:
- 2 Durst Stemmed projectile points (Fig. 6, No.'s 5 & 6)
- 1 Burin (Fig. 6, No. 8, and Fig. 19, No. 2)
- 1 Knife
- 2 Implements
- 81 Chert flakes
- 10 Granitic fragments

One fire pit was located and excavated and fifteen flakes were recovered. In view of the presence of features at this site, it is recommended that extensive excavations be undertaken at Kaukl Site VIII. It is further recommended that earth moving equipment be used to remove the plow zone.

Kaukl Site IX (Ve-166) is located in the NW-SE-NE-SE-NW ¼ of Section 9, T13N, R2W, directly west of STH 131 and 500 yards south of Ve-165. This campsite extends along a bench south to the river terrace. The site is approximately 200' by 75'. A Mr. Hagen of Indian Creek reported finding numerous projectile points in this site area. The site was in clover at the time of survey.

Kaukl Site X (Ve-135) is located in the SE-NE-SW-SW-

¼ of Section 4, T13N, R2W, at the base of the bluff and immediately west of the Kickapoo River. The site lies along a rock face that is 500' long, 10' high, with an overhang of 2' to 5' that continues along the rock face. The average soil deposit is 1' to 2' deep. No artifacts were recovered from the surface.

Rose Site I (Ve-44) is located in the NW ¼ of the NW¼ of Section 9, T13N, R2W, on the north bank of Weister Creek just above its junction with the Kickapoo River. Material was scattered over an area 100' by 100'. The following material was recovered from the surface:

Prehistoric objects:
- 1 Projectile point
- 1 Projectile point fragment
- 3 Scrapers
- 1 Blade fragment
- 35 Chert flakes (Buck and Wilson, 1960)

Rose Site II (Ve-146) is located in the SW-NE-NE-NE ¼ of Section 8, T13N, R2W, on the north side of the mouth of a hollow SW of the Rose home at the base of the bluff. This rockshelter is 100' long, 10' to 15' high, with a 10' overhang, and over 4' of soil deposit. One five-foot test square was placed in the center of the rockshelter and excavated to a depth of 4'. The rockshelter proved to be sterile and is not recommended for excavation.

Dorchied Site I (Ve-45) is located in the SE ¼, SE ¼, Section 5, T13N, R2W. The field and ridge where the site was initially located is planted in oats and grasses and is currently part of the Feed Grain Program. Before the owner would permit excavation, it was necessary to get permission from the county office of the United States Department of Agriculture. Such permission was granted under the condition that the pits be refilled and topsoil replaced. Mr. Dorchied requested that the excavated areas be replanted. Since seed of the correct varieties were not available, excavations were confined to the borders of the field and outside it. Survey results as well as local informants emphasized the point that we were probably digging outside the main area of the site since most chips, flakes, and implements were found on a slight rise near the middle of the field which measures 200 by

100 feet. Four test squares yielded the following:

Prehistoric objects:
- 73 Chert and quartzite flakes
- 2 End scrapers (Fig. 6, No.'s 27, 28)
- Charcoal fragments

It is recommended that excavation be undertaken at Dorchied Site I. The test squares outside the main part of the site, indicate a fairly widespread occurrence of materials. Work near the central area should produce important information concerning the occupation of this site. However, if more productive sites are dug, this site may well be abandoned. Before land purchase, the Dorchied site could only be dug in late fall after crop harvest (Brockington, 1961). (See Fig. 6, No.'s 12-28 for artifacts from the site.)

Steinmetz Site I (Ve-46) is located in the SE ¼ of the SW ¼ of Section 5, T13N, R2W, on a low sand ridge on the north bank of Weister Creek. Material was widely scattered over an area 150' by 50'. The following material was recovered from the site:

Prehistoric objects:
- 1 Scraper fragment
- 3 Implement fragments
- 21 Chert flakes (Buck and Wilson, 1960)

V. Daines Site I (Ve-80) is located in Section 5, T13N, R2W. This village site is outside the reservoir area.

J. Daines Site I (Ve-81) is located in the SW-NE-NW-NE ¼ of Section 6, T13N, R2W. The site encompasses an area 300 by 100 yards. This campsite yielded one side scraper, two choppers, one core, eight chert flakes, and one animal bone fragment.

J. Wolfe Site I (Ve-78) is located in the W ½-SE-SW-SE-NE ¼ of Section 6, T13N, R2W, on a sandy rise north of CTH "P" and south of Weister Creek. The site is confined to an area approximately 100 by 50 yards. The following material was recovered from the surface of this campsite:

Prehistoric objects:
- 2 End scrapers
- 2 Side scrapers
- 1 Implement fragment
- 4 Worked flakes
- 50 Chert flakes
- 5 Chert fragments

J. Wolfe Site II (Ve-79) is located in the E ½ of SE-SW-SE1NE ¼ of Section 6, T13...., R2W, on a sandy rise 50 yards east of VE-78 and north of CTH "P." The site is confined to an area approximately 50 yards square and yielded the following material from the surface: one knife, one implement fragment, one worked flake, eight chert flakes, and sixteen chert fragments.

O. Wolfe Site I (Ve-76) is located in the SW-NE-NW-NE-NE ¼ of Section 6, T13N, R2W, east of Weister Creek and west of the town road on a rise that is 75 yards SW of outbuildings. The site is confined to an area approximately 25 yards square. One quartzite drill reworked from an expanding stem projectile point, two worked flakes, one quartzite flake, and twenty-eight chert flakes were recovered from the surface of this campsite.

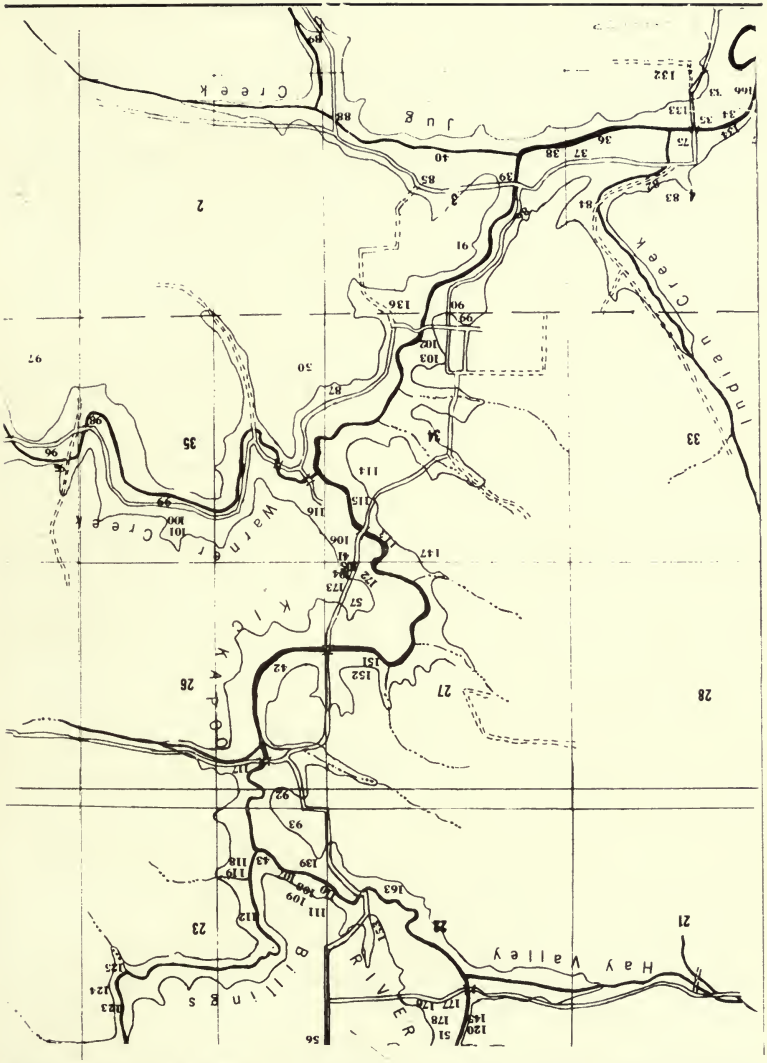
O. Wolfe Site II (VE-77) is located in the SE-NW-NW-NE-NE ¼ of Section 6, T13N, R2W, and is 100 yards east of Ve-76. This site is confined to an area 10 yards square. This campsite yielded one chopper and four chert flakes from the surface.

Silbaugh Site I (Ve-132) is located in Section 4, T13N, R2W. This campsite is outside the reservoir area.

Silbaugh Site II (Ve-133) is located in the SW-SW-NW-SW ¼ of Section 4, T13N, R2W, on the flood plain 100 yards east of the bridge on the south side of the Kickapoo River. This site lies along a rock face 200' long, 6' to 15' high, with an overhang of 2' to 5' that continues along the rock face. This rockshelter faces north and has over 4' of soil deposit. No artifacts were recovered from the surface.

Munson Site I (Ve-75) is located in the NW-SW-NW-SE ¼ of Section 4, T13N, R2W, 75 yards north of the Kickapoo River and west of STH 131. Material is confined to an area 100 yards square. The site appears to be a large campsite. The following material was recovered from the surface of the site:

Prehistoric objects:
- 1 Knife fragment
- 1 Chert hammerstone
- 2 Core knives
- 1 Implement fragment
- 3 Worked flakes



KEY TO FIG. 5, MAP 3; Kickapoo reservoir area, showing site locations.

Stark (T. 13 N., R. 2 W.) and Whitestown (T. 14 N., R. 2 W.) townships are separated by a single, dark, broken line below the town of Rockton (SW ¼ of Section 34). Squares indicate township sections. Heavy black lines indicate the Kickapoo River and its tributary creeks. Roads are indicated by solid or broken double lines. Lighter black lines parallel to the river, creeks, and valleys represent the 858 foot contour interval which marks the limit of the maximum pool. The larger numbers are section numbers while smaller numbers designate site locations.

1 Quartzite flake
1 Chalcedony flake
78 Chert flakes
5 Chert fragments
2 Shell fragments

Munson Site II (Ve-82) is located in the NW-SE-SE-SW-NE ¼ of Section 4, T13N, R2W, on the west side of Indian Creek and the county road. The site is confined to the northern edge of a field and is 50 yards by 25 yards. The following material was recovered from the surface of this campsite:

Phehistoric objects:
1 Raddatz Side-notched projectile point
1 Knife
1 Quartzite flake
38 Chert flakes
5 Chert fragments

Munson Site III (Ve-83) is located in the NE-SW-SW-NE ¼ of Section 4, T13N, R2W, on the third terrace above and west of Ve-82. The site is confined to an area approximately 300' by 100'. This campsite is out of the maximum pool area but a projected county road will pass directly through the site. One implement fragment, one worked flake, one burned animal bone fragment, and fifty-eight chert flakes were recovered from the surface of the site.

A. and E. Anderson Site I (Ve-84) is located in the SW-NW-SE-SE-NE ¼ of Section 4, T13N, R2W, and is east of Indian Creek and the county road. This campsite is confined to an area 50 by 100 yards and yielded seven chert flakes and one chert fragment from the surface.

N. Nottlestad Site I (Ve-36) is locater in the NE ¼ of the SW ¼ of Section 4, T13N, R2W, on a sandy ridge on the first terrace of the Kickapoo River. A total of 14 chert flakes were found in an area 50' by 25' indicating that this is a small campsite (Buck and Wilson, 1960).

N. Nottlestad Site II (Ve-37) is located in the NE¼ of the SW ¼ of Section 3, T13N, R2W, on a sandy ridge on the first terrace of the Kickapoo River about 800' north of the river. The site is probably a sizeable campsite, material being found in an area 100' by 500' along the top of the ridge. The following material was recovered from the surface of the site: three implement fragments and fifty chert flakes (Buck and

Wilson, 1960).

N. Nottlestad Site III (Ve-38) is located in the NW ¼ of the SW ¼ of Section 3, T13N, R2W, on a low sand ridge about 300' north of the Kickapoo River and about 500' southeast of Ve-37. This campsite covers an area of 300' square and the following material was recovered from the surface:

Prehistoric objects:
- 3 Projectile point fragments
- 1 Implement
- 1 Implement fragment
- 59 Chert flakes (Buck and Wilson, 1960)

N. Nottlestad Site IV (Ve-86) is located in the NW-NW-SE-NW ¼ of Section 3, T13N, R2W. This site, located at a large rock outcrop immediately west of STH 131, is a rockshelter 20' long, 15' high, with a 20' overhang, and over 4' of soil deposit. No artifacts were recovered from the surface:

N. Nottlestad Site V (Ve-85) is located in the SE-SW-SW-SW-NE ¼ of Section 3, T13N, R2W, west of Indian Creek and south of the county road. The site is approximately 150' square. The following material was recovered from the surface of this campsite:

Prehistoric objects:
- 1 Projectile point base
- 1 Projectile point fragment
- 1 Core knife
- 1 Worked flake
- 3 Chert flakes
- 3 Animal bone fragments

N. Nottlestad Site VI (Ve-174) is located in the NE-SW-NW-NE-SE ¼ of Section 4, T13N, R2W, on the second terrace of the Kickapoo River. This village site is north of STH 131 and 100 yards north of the tobacco barn. Numerous projectile points have been found here by local collectors. The site is extended over an area 100 yards square.

Risen Site I (Ve-39) is located in the NE ¼ of the SW ¼ of Section 3, T13N, R2W. To the west the land slopes down to the Kickapoo River while to the south and southwest is a level area being used as pasture. East of the site are farm buildings and to the north are found rock outcrops and very shallow rocky soil. Nine five-foot test squares were dug in the areas west and south of the tobacco patch. In all the following objects were recovered:

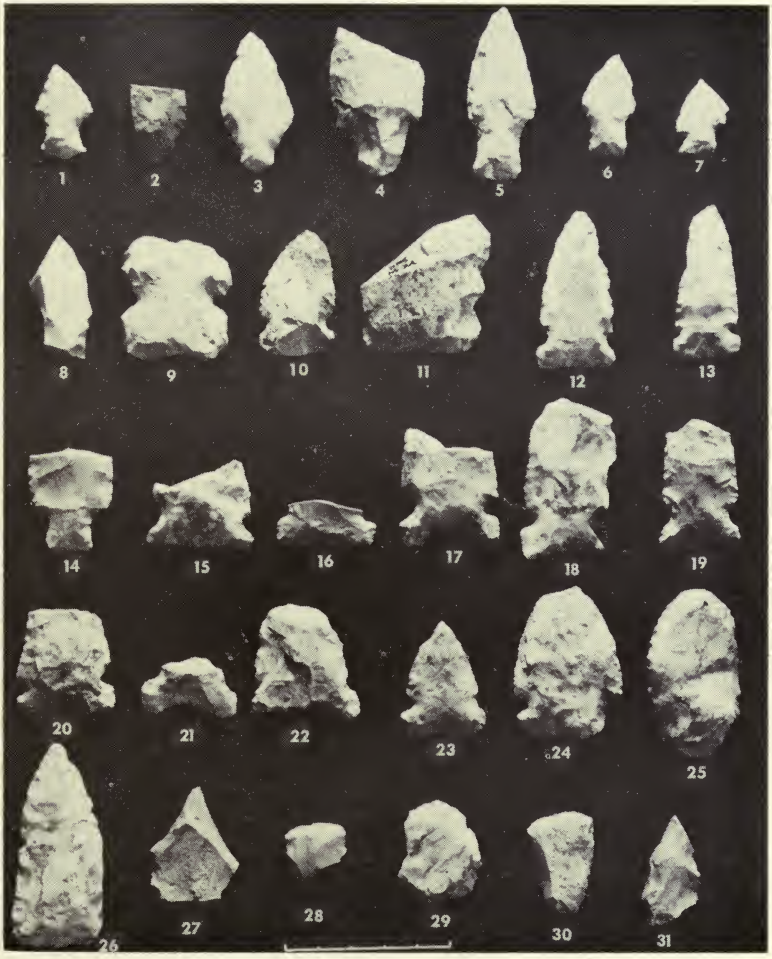
Prehistoric objects:
1300 Chert and quartzite flakes
9 Projectile point fragments
1 Small triangular projectile point
3 End scrapers
1 Knife fragment
3 Chipped stone implement fragments
2 Grit tempered, cord marked body sherds
1 Hammerstone
Bone fragments
Charcoal fragments
Historic objects:
20 Metal fragments (Bolts, nails, staples, tin cans)
35 Glass and porcelain fragments

The area that yielded most of the finds was on a slight ridge to the southwest of the tobacco patch directly overlooking the Kickapoo River. The area is being used as a pasture and probably could be excavated with the permission of the owner or upon payment of a small crop damage fee. The ridge is about 25' wide and 90' feet long. Except for the ridge, the areas outside the tobacco patch have shallow soil and are extremely rocky.

Almost all artifacts were recovered from the first foot of soil. Eighteen flakes, a hammerstone, and charcoal fragments were found below the first foot. However, modern materials were also found throughout the first foot of soil. The presence of these modern materials indicates considerable soil disturbance which lessens the possible archaeological value of the site. In view of the low yield in undisturbed soil and the restricted area of yield, further excavations at Risen Site I are not recommended (Brockington, 1961).

Risen Site II (Ve-40) is located in the NE ¼ of the SW ¼ of Section 3, T13N, R2W, at the lower end of a gently sloping hill on the north bank of Jug Creek just above its junction with the Kickapoo River. The size of the site, 300' by 100', and the amount of material indicate this is probably a small village. The following material was recovered from the surface of the site:

Prehistoric objects:
1 Projectile point
3 Implement fragments
1 Grit tempered, cord marked body sherd
86 Chert flakes (Buck and Wilson, 1960)



KEY TO FIG. 6; Lithic artifacts from Ve-32, 34, 45, 59, 63, 158, and 165.

1. Durst Stemmed projectile point, chert, Ve-158, S-1
2. Side-scraper, chert, Ve-158, S-2
3. Durst Stemmed projectile point, chert, Ve-158, S-3
4. Contracting stem projectile point, chert, Ve-158, S-4
5. Durst Stemmed projectile point, chert, Ve-165, L70-1-1
6. Durst Stemmed projectile point, chert, Ve-165, L20-1-1
7. Expanding stemmed projectile point, chert, Ve-32, +25R5-1-1
8. Primary burin, chert, Ve-165, S-1
9. Reworked Raddatz Side-notched projectile point, chert, Ve-32, L20+5-2-1
10. Raddatz Side-notched projectile point, chert, Ve-34, S-1
11. Secondary burin, chert, Ve-34, S-2

12. Raddatz Side-notched projectile point, chert, Ve-45, S-1
13. Raddatz Side-notched projectile point, chert, Ve-45, S-2
14. Straight-stemmed projectile point, Ve-45, S-3
15. Side-notched projectile point, chert, Ve-45, S-4
16. Raddatz Side-notched projectile point fragment, chert, Ve-45, S-5
17. Osceola projectile point, chert, Ve-45, S-6
18. Side-notched projectile point, chert, Ve-45, S-7
19. Side-notched projectile point, chert, Ve-45, S-8
20. Side-notched projectile point fragment, chert, Ve-45, S-9
21. Osceola projectile point fragment, chert, Ve-45, S-10
22. Side-notched projectile point, chert, Ve-45, S-11
23. Side-notched projectile point, chert, Ve-45, S-12
24. Expanding stem projectile point, chert, Ve-45, S-13
25. Side scraper, chert, Ve-45, S-14
26. Knife, chert, Ve-45, S-15
27. End scraper, chert, Ve-45. S48-1-1
28. End scraper, chert, Ve-45, O+45-1-1
29. End scraper, chert, Ve-59, O+30-1-1
30. End scraper, chert, Ve-59, O+70-1-2
31. Primary burin, chert, Ve-63, S-1

Nofsinger Site I (Ve-88) is located in the NE-SE-NE-SE-SE ¼ of Section 3, T13N, R2W, on a terrace south of Jug Creek and west of the county road. The site is approximately 100 yards square and will be affected by the projected relocation of the state highway. The following material was recovered from the surface of this campsite:

Prehistoric objects:
1 Projectile point fragment
1 Implement fragment
2 Worked flakes
2 Deer teeth
13 Chert flakes

Dempsey Site I (Ve-89) is located in the SW-NW-NW-NW ¼ of Section 11, T13N, R2W, west of South Jug Creek and east of the county road. This campsite is confined to an area approximately 100 by 25 yards. The site will be affected by the projected relocation of the state highway. One core knife, one end scraper, one implement fragment, one worked flake, and nine chert flakes were recovered from the surface of this site.

T. Nottlestad Site I (Ve-91) is located in the NW-SW-SW-NW-NE ¼ of Section 3, T13N, R2W, on the third terrace in the Kickapoo River Valley. The site is within the projected conservation recreation area. The site was in oats at the time of survey but the landowner reported finding

numerous artifacts in this area.

Lisney Site I (Ve-49) is located in the NE ¼ of the NW ¼ of Section 3, T13N, R2W, in a field behind the Lisney house. Material is confined to an area approximately 150' by 75'. The site appears to be a campsite. One side-notched projectile point and twenty chert flakes were recovered from the surface.

Lisney Site II (Ve-90) is located in the SW-NE-NE-NW ¼ of Section 3, T13N, R2W. This site extends along a large outcrop immediately on the west side of STH 131 and on the north side of the first hollow, south of Rockton. This rockshelter is 100' long, 12' to 15' high, with a 3' overhang, and 1½ to 4' to soil deposit. No artifacts were recovered from the surface.

McVey Site I (Ve-136) is located in the NE-NE-NE-NW-NE ¼ of Section 3, T13N, R2W, along the south side of a small creek that is east of the Kickapoo River and south of a curve in the gravel road. This site is a rockshelter 60' long, 6' high, with a 4' overhang, and over 4' of soil deposit. The rockshelter has not been tested.

WHITESTOWN TOWNSHIP (T. 14 N., R. 2 W.)
(Fig. 5. Map 3)

Earll Site I (Ve-42) is located in the E ½-SW-NE-NW-SW ¼ of Section 26, T14N, R2W, on a low sandy ridge on the first terrace of the Kickapoo River. The site is approximately 200' north of the river and 50' north of the farm barn. Five five-foot squares were excavated on an east-west line. Two features were located and excavated. The soil consists of a plow zone, .9' in depth; a mottled yellow clay, .5 in depth. At a mean depth of 1.4', a reddish clay soil is encountered that is apparently sterile. Testing operations enabled us to delimit the confines of the site to an area 100' square. The following objects were recovered from the site:

Prehistoric objects:
- 1 Implement fragment
- 3 Quartzite flakes
- 478 Chert flakes
- 1 Chert fragment

Historic objects:
- 1 Nail
- 1 Glass fragment

In view of the presence of features and an occupation zone that contains prehistoric artifacts, it is recommended that the plow zone be removed by earth moving equipment and the features and occupation zone be excavated. The site is on land now a part of an estate.

Earll Site II (ve-50) is in Section 35, T14N, R2W. The site is a mound group and is outside the reservoir area.

Earll Site III (Ve-87) is located in the NW-SE-SE-NE-SE ¼ of Section 34, T14N, R2W, and extends along a large rock outcrop, east of the gravel road that is east of Rockton and lies at the same level as the road. This rockshelter is 30' long, 5' to 10' high, with a 12' overhang. One five-foot square was excavated to a dept of 4'. The second level (0.5' to 1.0' below surface) appears to be the occupation zone. At this level two features that could be "swirl holes" were excavated. The following objects were recovered:

Prehistorc objects:
12 Chert flakes
1 Quartzite flake
79 Chert fragments
Historic objects:
4 Glass fragments

In view of the yield from this rockshelter, from one test square, it is recommended that it be excavated. Previous to the work in the Kickapoo River valley, only seven rockshelters in the State of Wisconsin had been excavated. Rockshelters should offer an excellent cross-check, for comparative purposs, against the open sites and they may fill in chronological gaps that have not been closed by data gained at open sites.

Earll Site IV (Ve-102) is located in the NE-SW-SW-SE ¼ of Section 34, T14N, R2W, east of Rockton on the west side of the Kickapoo River, on the north side of the bridge. This site is a rockshelter 20' long, 8' high, with an overhang of 3', and over 4' of soil deposit. One five-foot square was excavated to a depth of 4' and found to be sterile. The rockshelter is not recommended for excavation.

Earll Site V (Ve-103) is located in the SE-NW-SW-SE ¼ of Section 34, T14N, R2W, 100 yards north of Ve-102. This site is a rockshelter 40' long, 10' high, with an overhang

of 4', and over 4' of soil deposit. One five-foot test square was excavated to a depth of 4' and the rockshelter was found to be sterile. This rockshelter is not recommended for excavation.

Earll Site VI (Ve-116) is located in the SE-SW-SW-NW-NW ¼ of Section 35, T14N, R2W, on the west side of the Kickapoo River and CTH "P", one hundred yards southeast of Frye Site V (Ve-106). This site is a rockshelter 60' long, 4' high, with a 3' overhang, and over 3' of soil deposit. One five-foot test square was placed in the center of the rockshelter and excavated to a depth of 3'. The rockshelter was found to be sterile and is not recommended for excavation.

Byers Site I (Ve-113) is located in the SE-NW-SW-NE-NE ¼ of Section 34, T14N, R2W, on the west side of STH 131 and southwest of the Kickapoo River. This site is a rockshelter 30' long, 4' high, with a 4' overhang, and over 3' of deposit. The site was not tested.

Byers Site II (Ve-114) is located in Section 34, T14N, R2W. This campsite is outside the reservoir area.

Byers Site III (Ve-115) is located in the SW-SE-SW-NE-NE of Section 34, T14N, R2W, on the west side of the Kickapoo River and east of STH 131. The site is a rockshelter 15' long, 8' high, with a 5' overhang, and over 2' of deposit. No attempt was made to test the site.

Byers Site IV (Ve-147) is located in Section 34, T14N, R2W. This rockshelter is outside the reservoir area.

H. Hopkins Site I (Ve-99) is located in the SE-SW-SW-NW-NE ¼ of Section 35, north of Warner Creek in a corn field surrounding the barn. This site is confined to an area approximately 100 yards square. This campsite yielded one side scraper, two end scrapers, two implement fragments, eighteen chert flakes, and four chert fragments.

H. Hopkins Site II (Ve-100) is located in the NW-SE-SW-NW-NE ¼ of Section 35, T14N, R2W, 10 yards northwest of the outbuildings and north of road. This rockshelter faces east and is 40' long, 15' high, with a 4' overhang, and 4' to 5' of deposit. One five foot square was placed in the center of the rockshelter. This test square was excavated in

natural stratigraphic levels to a depth of 5'. Flakes and artifacts were found in all levels. In all the following objects were recovered:

Prehistoric objects: (Fig. 7, No.'s 12-15, and 19)
- 1 Corner-notched projectile point base
- 1 Cord roughened body sherd
- 1 Chopper
- 5 Implement fragments
- 83 Chert flakes
- 24 Chert fragments
- 36 Preserved wood fragments
- 3 Animal bone fragments

Historic objects:
- 1 Glass fragment

In addition, a trial sample of soil was submitted for pollen analysis to ascertain the presence or absence of pollen and the degree of abundance in the reservoir area. The following analysis was done by Peter Storck, Department of Anthropology, University of Wisconsin:

Soil sample 1; 2:0' below surface.
Slide numbers 11463DPS and 11463CPS
1 — Chenopodiaceae (Goosefoot Family): chiefly herbs; four grains
2—Hydrocharitacoae (Frog's-Bit Family): aquatic herbs; one grain
3 — Pinaceae (Pine Family): trees and shrubs; one grain
4 — Tiliaceae (Linden Family); trees (rarely herbs): one grain
5 — Fern spores are frequent but have not been identified
6 — A total of six pollen types could not be identified.

Soil sample 2; 2.65' below surface.
Slide numbers 11463APS and 11463BPS
1 — Abies (Fir): nineteen grains tentatively identified
2 — Alnus (Alder): one grain
3 — Ambrosia (Ragweed): one grain
4 — Cannabinaceae (Hemp Family): herbs; one grain
5 — Caprifoliaceae (Honeysuckle Family): shrubs or rarely herbs; one grain
6 — Chenopodiaceae (Goosefoot Family): chiefly herbs; one grain
7 — Cupressaceae (Juniperus): three grains
8 — Compositae (Composite Family): one grain

9 — Hydrocharitaceae (Frog's-Bit Family): acquatic herbs; one grain
10 — Picea (Spruce Family): four grains tentatively identified
11 — Pinaceae (Pine Family): one grain of white pine was tentatively identified
12 — Potamogetoneae (Potamogeton): pondweed; one grain
13 — Salicaceae (Willow Family): one grain
14 — Selaginellaceae (Spikemoss Family): tentative identification: one grain
15 — Spergularia (Sand-Spurrey): one grain
16 — Fern spores abundant
17 — A total of three pollen types could not be identified.

Summary: These identifications are to be considered tentative. Pollen is not extremely abundant in the slides which were studied. For statistical purposes a pollen count of from 100 to 200 grains/slide is desirable.

In view of the yield from one five-foot test square, it is recommended that this rockshelter be fully excavated. The land in front of the rockshelter should be tested to ascertain if the rockshelter was only used in inclement weather or served as a more permanent shelter.

H. Hopkins Site III (Ve-101) is located in the SE-NW-SW-NW-NE ¼ of Section 35, T14N, R2W, above Ve-100. This site is on a low bluff overlooking CTH "P" and Warner Creek. This campsite is in a small field used as a pasture area. Four five foot test squares were excavated. The soil consists of a humus zone .4' in depth, a mottled yellow clay .7' in depth, and at a mean depth of 1.2' a reddish clay is encountered that is apparently sterile. The following material was recovered from this site:

Prehistoric objects:
1 End scraper
1 Worked flake
254 Chert flakes
13 Chert fragments

The material that was recovered from this site can be directly associated with the rockshelter, Hopkins Site II Ve-100, that is directly beneath this site. It is recommended that this site be fully excavated.

Allikas Site I (Ve-98) is located in the NE-SW-NE-NE-SE ¼ of Section 35, T14N, R2W, in a small garden behind an abandoned house. Six five-foot squares were excavated in a north-south, east-west grid. One feature and three post molds were excavated. The soil consists of a plow zone 1.5' in depth, a brown, mottled clay occupation zone .4' in depth, and at a mean depth of 1.9', a yellow, sandy clay is encountered that is sterile. The following material was recovered from this campsite:

Prehistoric objects:

1 Durst Stemmed projectile point base
1 Pottery pipe fragment
1 End scraper
1 Side scraper
2 Cores
1 Knife fragment
2 Implement fragments
4 Worked flakes
232 Chert flakes
5 Quartzite flakes
8 Chert fragments
2 Charred animal bone fragments
26 Animal bone fragments

In view of the presence of features, post molds, and an occupation zone that contains prehistoric artifacts, it is recommended that the plow zone be removed by earth moving equipment and the features and occupation zone be excavated. This garden contains numerous historic artifacts in the plow zone.

Campbell Site I (Ve-95) is located in the NE-NW-SW-SW-NW ¼ of Section 36, T14N, R2W, on the south side of Warner Creek, 25 yards east of a farm lane. This rockshelter is 30' long, 6' to 12 high, with an 8' overhang, and 4' of soil deposit. One five-foot test square was excavated to a depth of 4' and the rockshelter was found to be sterile. This rockshelter is not recommended for excavation.

Campbell Site II (Ve-96) is located in the SW-NW-SE-SW-NW ¼ of Section 36, T14N, R2W, on a small, sandy ridge on the flood plain of Warner Creek, 150 yards south of CTH "P" and 150 yards east of a farm lane. This site is in a small pasture adjacent to a corn field. Three five-foot test squares were excavated. The soil consists of a humus zone

.3' in depth, a dark brown, mottled, sandy clay .5' in depth, a black, sandy clay (an old humus zone) .4' in depth, mottled clay .2' in depth, and at a mean depth of 1.4' a yellow sand is encountered that is sterile. The following material was recovered from this campsite: Two worked flakes and fifty-three chert flakes. The small campsite is confined to an area 25' square and in view of the possibility of there being natural stratigraphy, it is recommended for limited excavation.

C. and R. Erwin Site I (Ve-97) is located in Section 36, T14N, R2W. This site is a cave and outside the reservoir area.

C. and R. Erwin Site II (Ve-94) is located in the SW-NE-NW-SW ¼ of Section 36, T14N, R2W, on a talus slope and the first terrace of Warner Creek. This site is immediately southwest of the bridge and north of the creek. Eight five-foot test squares were excavated. The soil consists of a plow zone .8' in depth that is a brown, sandy clay, and a mottled. yellow clay .5' in depth. Below this yellow clay the soil appears to be sterile. The following material was recovered from this site:

Prehistoric objects:

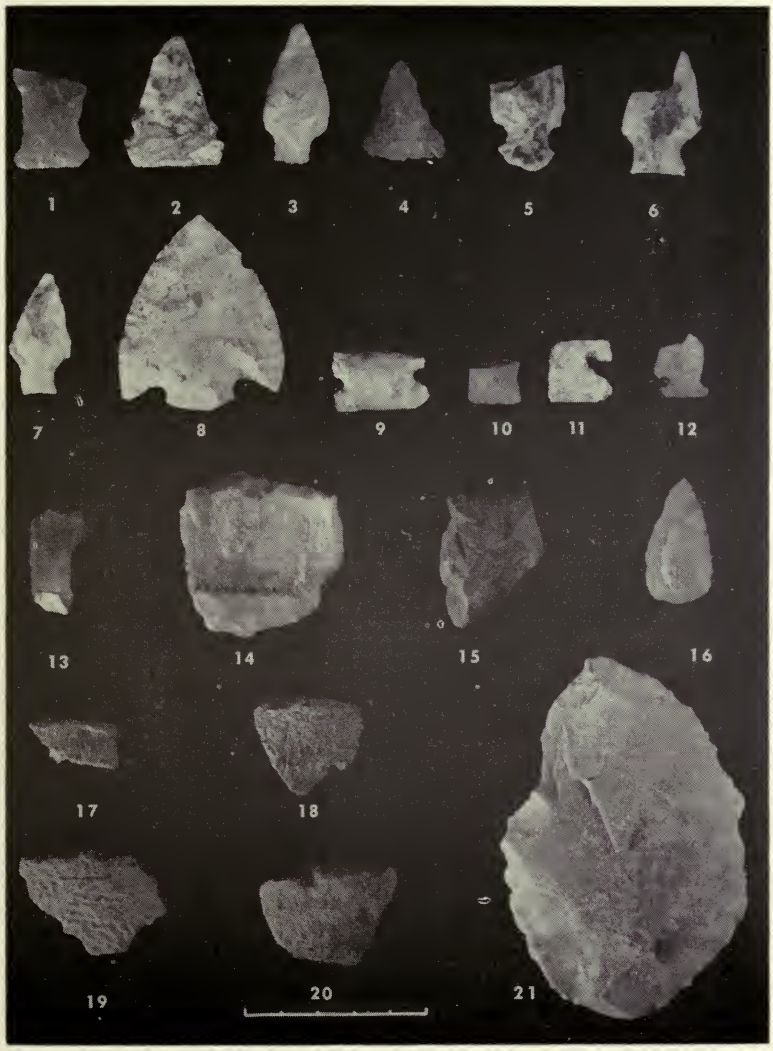
- 1 Projectile point fragment
- 1 Expanding stem projectile point base
- 1 Core knife
- 1 End scraper
- 1 Perforator fragment
- 5 Worked chert flakes
- 2 Worked chalcedony flakes
- 1 Cord roughened rim sherd with exterior node (Fig. 7, No. 18)
- 1 Cord roughened rim sherd (Fig 7, No. 17)
- 1 Plain rim sherd
- 2 Fingernail impressed body sherds
- 1 Grit tempered body sherd
- 4 Plain body sherds
- 4 Sherds — no surface
- 231 Chert flakes
- 7 Quartzite flakes
- 1 Chalcedony flake
- 2 Charcoal fragments
- 1 Animal bone fragment
- 19 Chert fragments

Historic objects:
3 Metal fragments
6 Ceramic fragments
2 Glass fragments
6 Nails

It is recommended that extensive excavation be undertaken at Erwin Site II. The testing operations were on the edge of a rise that is probably the source of the material that is scattered in the plow zone and occupation zone. The number of artifacts recovered indicates that there are features at this village site. Earth moving equipment could be used to remove the plow zone, but the recoverable material that is found there must be saved to give this multi-component site proper depth and scope.

Frye Site I (Ve-41) is located in the SW-NW-NE-NE-NE ¼ of Section 34, T14N, R2W, on a low bluff about 1000 feet north of the Kickapoo River. Five five-foot test squares were dug along a north-south line, and an east-west line. The soil consists of a plow zone 1.0' deep, and occupation zones that extend to a depth of 4.0', and vary in color from a brown sand to a yellow sand. The site was once occupied by the former Frye house and the land was cleared by burning the trees. There is, therefore, slight disturbance that makes it difficult to define refuse and fire pits. One fire pit and one refuse pit were excavated. The southern one-half of the site was found to be shallow due to bedrock a few inches below land that is now used as pasture. The following objects were recovered from the site:

Prehistoric objects: (Fig. 8, No.'s 1-25)
2 Expanding stem projectile points (Fig. 7, No.'s 1 and 6)
1 Corner-notched projectile point (Fig. 7, No. 5)
1 Unifacial projectile point (Fig. 7, No. 4)
2 Durst Stemmed projectile points (Fig. 7, No.'s 3 and 7)
1 Oconto Side-notched projectile point (Fig. 7, No. 2)
6 Knives
1 Scraper
2 Drills
12 Worked flakes
15 Implement fragments
1 Cord roughened body sherd



KEY TO FIG. 7; Lithic and ceramic artifacts from Ve-41, 72, 94, 100, 140, and 177; (Scale is 5 cm.; artifacts approx. two-thirds natural size).

1. **Expanding stem projectile point fragment, quartzite, Ve-41, R25+0-2-1**
2. **Oconto Side notched projectile point, chert, Ve-41, L5+20-5-1**
3. **Durst Stemmed projectile point, chert, Ve-41, L5+45-2-1**
4. **Unifacial projectile point, chert, Ve-41, L5+20-3-1**
5. **Corner-notched projectile point, chert, Ve-41, F3-1**
6. **Expanding stem projectile point, chert, Ve-41, L5+20-1-1**

7. **Durst Stemmed projectile point, chert, Ve-41, L5+45-4-1**
8. **Snyders projectile point, chert, Ve-72, S-1**
9. **Raddatz Side-notched projectile point base, chert, Ve-177, L5 +145-1-1**
10. **Durst Stemmed projectile point base, quartzite, Ve-177, L5 +145-1-2**
11. **Corner-notched projectile point fragment, chert, Ve-177, L5 +145-1-3**
12. **Corner-notched projectile point fragment, chert, Ve-100, TSI-2-1**
13. **Side scraper, chert, Ve-100, TSI-2-1**
14. **Side scraper, chert, Ve-100, TSI-5-1**
15. **End scraper, chert, Ve-100, TSI-5-3**
16. **Knife, quartzite, Ve-140, TSI-2-1**
17. **Cord roughened rim sherd, Ve-94, 50L5-1-1**
18. **Cord roughened rim sherd with exterior note, Ve-94, 50L5-1-2**
19. **Cord roughened body sherd, Ve-100, TSI-4-1**
20. **Grit tempered body sherd, Ve-140, TSI-3-1**
21. **Chopper, chert, Ve-140, TSI-F1-1**

2 Plain body sherds
1,378 Chert flakes
53 Quartzite flakes
6 Granitic fragments

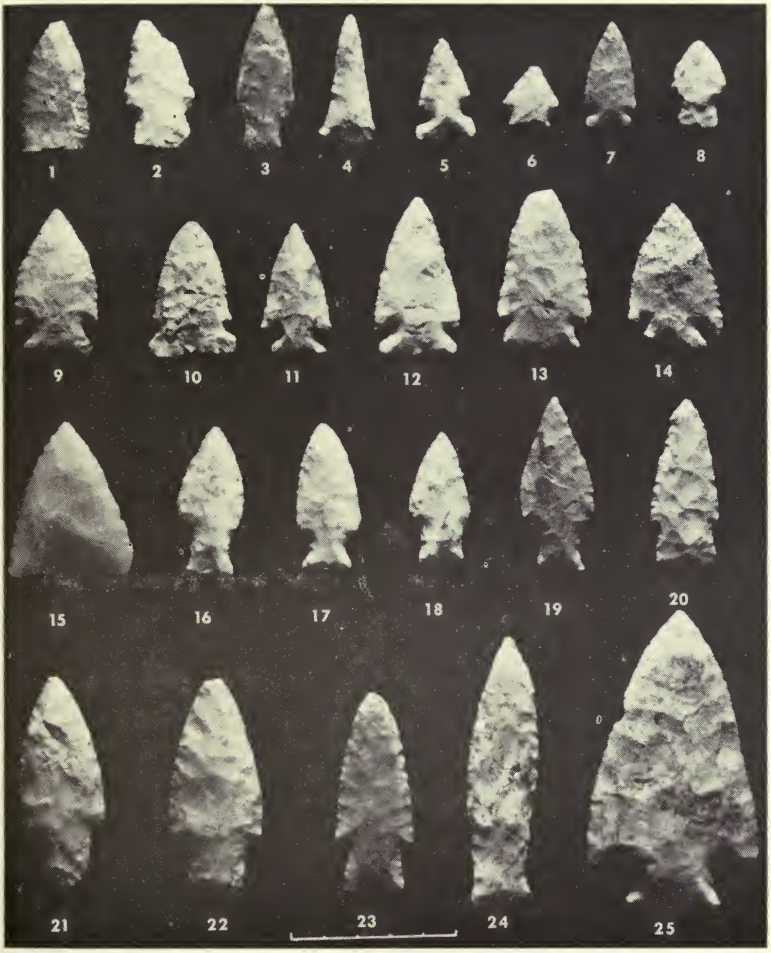
Historic objects:
18 Metal and glass fragments

In view of the yield from this site during the testing operations, and of the possible stratigraphy ranging from archaic to Woodland, it is strongly recommended that extensive excavation be undertaken at Frye Site I.

Frye Site II (Ve-57) is located in Section 27, T14, R2W. This former mound group is outside the reservoir area.

Frye Site III (Ve-104) is located in the NW-NW-NE-NE-NE ¼ of Section 34, T14N, R2W, on the north side of the Kickapoo River and 50 yards east of STH 131. The site is a rockshelter 30' long, 7' high, with a 5' overhang, and over 3' of soil deposit. One five-foot test square was excavated in the center of the rockshelter to a depth of 3'. This rockshelter was found to be sterile and is not recommended for excavation.

Frye Site IV (Ve-105) is located in the NW-NE-NE-NE-NE ¼ of Section 34, T14N, R2W, and is 50 yards east of Ve-104. This site is a rockshelter 60' long, 6' high, with a 3' overhang, and over 3' of soil deposit. One five-foot test square was placed in the center of the rockshelter and exca-



KEY TO FIG. 8. Lithic artifacts from the Frye collection (Ve-41-0); (Scale is 5 cm.; artifacts approx. two-thirds natural size).

1. **Distal fragment of lanceolate projectile point, obliquely flaked, chert, Ve-41-0-S-106.**
2. **Secondary burin, expanding stem projectile point, chert, Ve-41-0-S-94.**
3. **Durst Stemmed projectile point, chert, Ve-41-0-S-131.**
4. **Drill, chert, Ve-41-0-S-21.**
5. **Side-notched projectile point, chert, Ve-41-0-S-201.**
6. **Stemmed projectile point, chert, Ve-41-0-S-39.**
7. **Side-notched projectile point, chert, Ve-41-0-S-183.**
8. **Stemmed projectile point, chert, Ve-41-0-S-140**
9. **Corner-notched projectile point, chert, Ve-41-0-S-33.**
10. **Oconto projectile point, chert, Ve-41-0-S-174.**

11. Corner-notched projectile point, chert, Ve-41-0-S-153.
12. Corner-notched projectile point, chert, Ve-41-0-S-41.
13. Corner-notched projectile point, chert, Ve-41-0-S-30.
14. Cornernotched projectile point, chert,Ve-41-0-S-46.
15. Triangular knife, quartzite, Ve-41-0-S-18.
16. Durst Stemmed projectile point, chert, Ve-41-0-S-133.
17. Durst Stemmed projectile point, chert, Ve-41-0-S-150.
18. Durst Stemmed projectile point, chert, Ve-41-0-S-136.
19. Durst Stemmed projectile point. chert, Ve-41-0-S-128.
20. Expanding stem projectile point, chert, Ve-41-0-S-95.
21. Contracting stem projectile point, chert, Ve-41-0-S-26.
22. Contracting stem projectile point, chert, Ve-41-0-S-27.
23. Expanding stem projectile point, chert, Ve-41-0-S-88.
24. Expanding stem projectile point, chert, Ve-41-0-S-124.
25. Corner-notched projectile point, chert, Ve-41-0-S-47.

vated to a depth of 3'. The rockshelter was found to be sterile and is not recommended for excavation.

Frye Site V (Ve-106) is located in the NW-SE-NE-NE-NE ¼ of Section 35, T14N, R2W, and is on the west side of the junction of the hollow, east of Ve-105, and on the west end of the marsh. This site is a rockshelter 60' long, 5' to 10' high, with an overhang of 4' to 6', and over 3' of soil deposit. One five-foot test square was placed in the center of the rockshelter and excavated to a depth of 3'. The rockshelter was found to be sterile and is not recommended for excavation.

Frye Site VI (Ve-172) is located in the SW-SW-SW-NE-SE ¼ of Section 27, T14N, R2W, on the first terrace of the Kickapoo River in a field west of STH 131 and directly south of the farm road. This site appears to be a village 300' square. Numerous artifacts have been recovered from this site by Mr. Frye (Fig.'s 8, 13, 14, 15, 16, and 17).

Frye Site VII (Ve-173) is located in the SW-SW-SE-NE-SE ¼ of Section 27, T14N, R2W, on the first terrace of the Kickapoo River. This site is east of STH 131, south of the farm road, and 300' north of Ve-41. This campsite is 75 yards square. Numerous artifacts have been recovered from this site by Mr. Frye (Fig.'s 8, 13, 14, 15, 16, and 17).

Haugh Site I (Ve-151) is located in the SW-NW-NE-SE ¼ of Section 27, T14N, R2W, on the north side of the Kickapoo River, ¼ mile west of STH 131. This rockshelter is 40' long, 3' to 7' high, with a 7' overhang, and over 3' of deposit. It faces north and has not been tested.

KEY TO FIG. 9, MAP 4; Kickapoo reservoir area, showing site locations.

Whitestown Township (T. 14 N., R. 2 W.). The Bench Mark and light lines in Section 3 mark the location of the town of Ontario. The squares indicate township sections. Heavy black lines indicate the Kickapoo River and its tributary creeks. Roads are indicated by

solid or double broken lines. Light or black lines parallel to the river, creeks, and valleys represent the 858 foot contour interval which is the limit of the maximum pool. The larger numbers are section numbers while the smaller numbers designate site locations.

Haugh Site II (Ve-152) is located in Section 27, T14, R2W. This campsite is outside the reservoir area.

Seaman Site I (Ve-117) is located in the NE-SW-NE-NW ¼ of Section 26, T14N, R2W, on the west side of the Kickapoo River and north of the county road. This rockshelter is 200' long, 7' high, with a 10' overhang, and over 2' of soil deposit. No attempt was made to test the site.

Clark Site I (Ve-92) is located in Section 26, T14N, R2W. This campsite is outside the reservoir area.

Clark Site II (Ve-93) is located in Section 26, T14N, R2W. This campsite is outside the reservoir area.

Anderson Site I (Ve-43) is located in the NW-NW-NW-SE-SW ¼ of Section 23, T14N, R2W, on the low bluff overlooking the junction of Billings Creek and the Kickapoo River. Nine five-foot test squares were excavated on a north-south, east-west grid on the top of this bluff. These squares were dug in cultivated areas and a pasture. The soil in the cultivated area consisted of a plow zone .8' in depth, and a reddish clay soil, apparently sterile, lies immediately below the plow zone. In the pasture area the turf was removed and the sub-soil is only .7' in depth. The following objects were recovered from the site:

Prehistoric objects:

- 1 Side-notched projectile point
- 3 Knife fragments
- 1 Quartzite end and side scraper
- 3 End scrapers
- 4 Worked flakes
- 1 Utilized flake
- 1 Abrading stone
- 11 Quartzite flakes
- 106 Chert flakes
- 1 Chert fragment
- 1 Animal bone fragment

Anderson Site I conforms to a pattern encountered in the Kickapoo Reservoir area. That is, excellent artifactual material that is located directly below the surface and that ex-

tends only as deep as the plow zone. Soil erosion and one hundred years of intensive cultivation have removed the possibility of stratigraphy. These sites, therefore, have a value that is difficult to judge. Artifacts from the plow zone may have some scientific value in seriation studies. The possibility that features may be encountered must also be taken into consideration. Recommendations, for or against excava- must be held in abeyance until all the open sites have been tested; then these sites may be viewed in proper perspective.

Anderson Site II (Ve-107) is located in the NW-SE-SE-NW-SW ¼ of Section 23, T14N, R2W, on a rise on the first terrace of the Kickapoo River. This site is 100 yards west of Anderson Site I (Ve-43). This site is confined to an area approximately 25 yards square. Three five-foot test squares were excavated on an east-west line. The soil consists of a plow zone of dark gray clay mixed with loam, .6' in depth, and at a mean depth of .6' red clay is encountered that is apparently sterile. One side-notched projectile point, two implement fragments, twenty-three chert flakes, three quartzite flakes, and two animal bone fragments were recovered from the site. Due to the fact that these artifacts were recovered from the plow zone, it is recommended that there be no further testing or excavation at Anderson Site II.

Anderson Site III (Ve-108) is located in the NE-SW-SE-NW-SW ¼ of Section 23, T14N, R2W, on a sandy rise 50 yards west of Ve-107. The site is confined to an area approximately 25 yards square and extends into a pasture area to the south. One knife, one worked flake, and six chert flakes were recovered from the surface of this campsite.

Anderson Site IV (Ve-109) is located in Section 23, T14N, R2W. This campsite is outside the reservoir area.

Anderson Site V (Ve-110) is located in the SW-NE-SW-NW-SW ¼ of Section 23, T14N, R2W, on the first terrace of the Kickapoo River. This site is 150 yards west of Anderson Site III (Ve-108). The site is confined to an area 25 yards square. Three five-foot test squares were excavated. The soil of this area consists of a humus zone .2' in depth, a brown clay occupation zone .6' in depth, and at a mean depth

of .8' a mottled orange clay is encountered that is sterile. The following artifacts were recovered from this campsite:

Prehistoric objects:
- 1 Knife fragment
- 1 Worked flake
- 1 Shell fragment
- 36 Chert flakes
- 1 Quartzite flake

Anderson Site V indicates that artifactual material that is directly below the surface can be excavated in .3' levels if the site has not been plowed. Stratigraphy would probably not be encountered but if Anderson Site V is a single component site, as many in the reservoir are, then its archaeological value cannot be underrated. Therefore, it is recommended that Anderson Site V be fully excavated.

Anderson Site VI (Ve-111) is located in the NW-SE-NW-NW-SW ¼ of Section 23, T14N, R2W, in a corn field 25 yards above Ve-107 and Ve-110. The site is scattered over 300 by 500 yards and is within the projected relocation of the state highway. This campsite yielded one end scraper, seventeen chert flakes, one quartz flake, and five chert fragments from the surface.

Anderson Site VII (Ve-112) is located in the NW-SE-NE-SW ¼ of Section 23, T14N, R2W, on the east side of Billings Creek. This site is a rockshelter 100' long, 5' to 7' high, with a 15' overhang, and over 2' of soil deposit. No attempt was made to test the site.

Anderson Site VIII (Ve-118) is located in the NW-NE-SE-SW ¼ of Section 23, T14N, R2W, on the south side of the hollow and the creek, and the east side of the Kickapoo River. This site is a rockshelter 20' long, 6' high, with a 5' overhang, and over 2' of soil deposit. No attempt was made to test the site.

Anderson Site IX (Ve-119) is located in the NW-NE-SE-Sw ¼ of Section 23, T14N, R2W, 50 yards north of Ve-118 and south of the creek. This site is a rockshelter 20' long, 10' high, with a 6' overhang, and over 2' of soil deposit. No attempt was made to test the site.

Anderson Site X (Ve-139) is located in the SW-NW-NW-SW-SW ¼ of Section 23, T14N, R2W, on the south side

of the Kickapoo River at the base of a bluff 150 yards east of STH 131. This rockshelter is 100' long, 3' to 10' high, with a 10' overhang, and 2' of soil deposit. This rockshelter faces north and has not been tested.

Cass Site I (Ve-123) is located in the SW-SW-SE-NE-NE ¼ of Section 23, T14N, R2W, east of Billings Creek and 100 yards south of the farm buildings. This site is approximately 50 yards square and on a sandy rise. The campsite yielded one implement fragment, one worked flake, one quartzite flake, and 27 chert flakes from the surface.

Cass Site II (Ve-124) is located in Section 23, T14N, R2W. This campsite is outside the reservoir area.

Cass Site III (Ve-125) is located in the SW-SW-NE-SE-NE ¼ of Section 23, T14N, R2W, southeast of Billings Creek and 300 yards southwest of Ve-123. The site is a rockshelter 100' long, 20' high, with a 10' overhang, and over 3' of soil deposit. No attempt was made to test this rockshelter.

Ice Cave (Ve-122) is owned by the state of Wisconsin and is in Wildcat State Park in Section 13, T14N, R2W. This rockshelter is outside the reservoir area.

Lawrence Site I (Ve-153) is located in Section 22, T14N, R2W. This campsite is outside the reservoir area.

Lawrence Site II (Ve-163) is located in the SW-SW-NE-SE ¼ of Section 22, T14N, R2W, on the south side of the Kickapoo River 200' down river from the motorcycle bridge. This site is a rockshelter 25' long, 6' to 10' high, with a 12' overhang, and over 4' of soil deposit. This rockshelter faces west and has not been tested.

Roberts Site I (Ve-120) is located in Section 22, T14N, R2W. This rockshelter is outside the reservoir area.

Robert Site II (Ve-143) is located in the SW-SE-SE-SW ¼ of Section 15, T14N, R2W, on the north side of the junction of White Hollow and the Kickapoo River. This rockshelter is at the base of the bluff and is 100' long, 8' high, with a 6' overhang, and over 4' of soil deposit. It faces east and has not been tested.

Roberts Site III (Ve-144) is located in the NW-NE-NE-NE ¼ of Section 22, T14N, R2W, on the south side of the junction of White Hollow and the Kickapoo River. This rockshelter is at the base of a bluff and is 30' long, 15' high, with

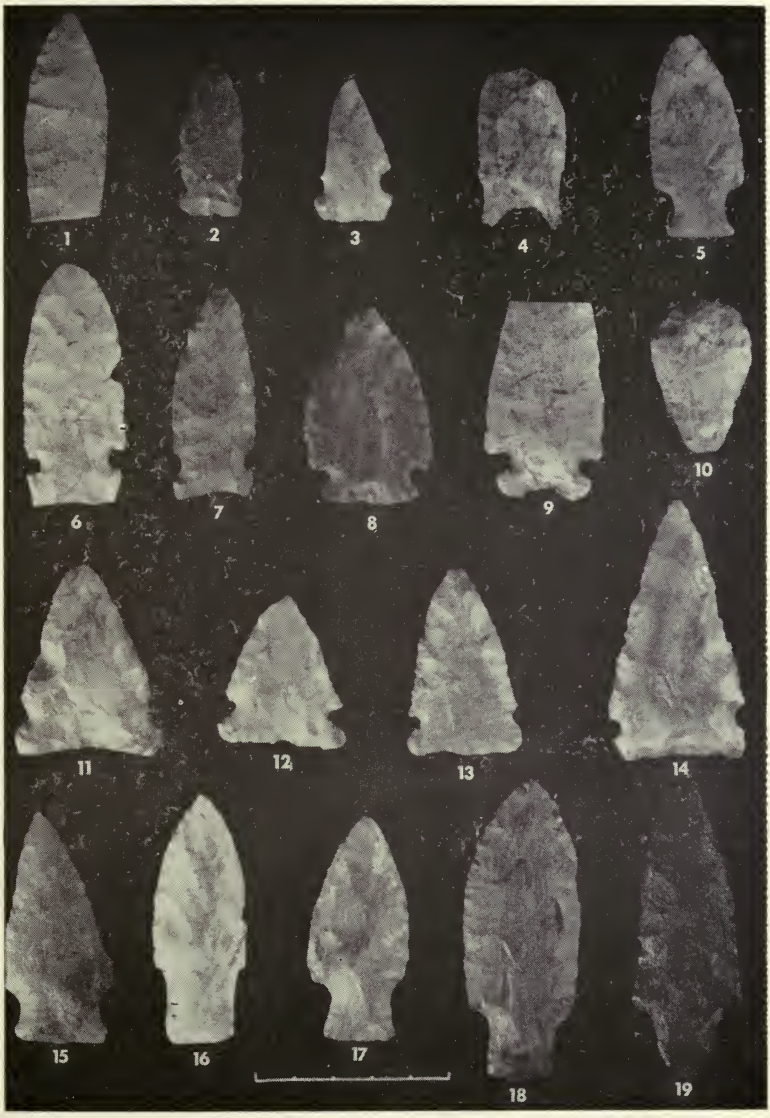
a 5' overhang, and over 1' of soil deposit. It faces east and has not been tested.

Roberts Site IV (Ve-145) is located in the SW-SE-NE-NE ¼ of Section 22, T14N, R2W, 150 yards north of the bridge to Hay Valley on the west side of the Kickapoo River. This rockshelter is at the base of a bluff and is 100' long, 1' high, with a 5' overhang, and 2' of soil deposit. This rockshelter faces east and has not been tested.

Roberts Site V (Ve-180) is located in the NW-SE-SE-SE-SW ¼ of Section 15, T14N, R2W, on the north side of the Kickapoo River, 100 yards southwest of Ve-121. This site is a rockshelter 75' long, 15' high, with a 12' overhang, and 2' of soil deposit. One five-foot test square was excavated to a depth of 2' and was found to be sterile. This rockshelter is not recommended for excavation.

Gillen Site I (Ve-59) is located in the NW-SW-SE-NW-NE ¼ of Section 22, T14N, R2W, on the first terrace on the east side of the Kickapoo River and 100 yards north of Gillen Site II (Ve-51). Five five-foot test squares were excavated on an east-west line. One feature was located and excavated. The soil consists of a plow zone .6' in depth, a compact, yellow sand occupation zone .4' in depth. At a mean depth of 1.0' a red clay is encountered that is apparently sterile. This campsite is confined to an area 150' by 75'. One implement fragment, two worked flakes, two end scrapers (Fig. 6, No's. 29 and 30), and one hundred and twenty-two chert flakes were recovered in view of the presence of features and an occupation zone that contains prehistoric artifacts, it is recommended that the plow zone be removed by earth moving equipment and the features and the occupation zone excavated.

Gillen Site II (Ve-51) is located in the SE-NW-NE-SW-NE ¼ of Section 22, T14N, R2W, on a flat bench above and east of the Kickapoo River. Five five-foot squares were excavated on an east-west line, and one feature was located and excavated. The soil consists of a plow zone .6' in depth, a compact yellow-tan sand .4' in depth, and at a mean depth of 1.0' a hard-packed reddish-tan sand is encountered that is sterile. This campsite is confined to an area approximately



KEY TO FIG. 10. Lithic artifacts from the Gillen collection (Ve-51-0); (Scale is 5 cm.; artifacts approx. two-thirds natural size).

1. **Distal fragment of Plainview projectile point, grey chert, S-18.**
2. **Side-notched projectile point, chert, S-69.**
3. **Secondary burin, side-notched projectile point, chert, S-95.**
4. **Concave base projectile point, chert, S-15.**
5. **Corner-notched projectile point, chert, S-27.**
6. **Raddatz Side-notched projectile point, chert, S-91.**

7. Side-notched projectile point, chert, S-52.
8. Corner-notched projectile point, chert, S-10.
9. Corner-notched projectile point, chert, S-89.
10. End scraper, chert, S-129.
11. Oconto projectile point, chert, S-112.
12. Oconto projectile point, chert, S-103.
13. Oconto projectile point, chert, S-84.
14. Oconto projectile point, chert, S-101.
15. Corner-notched projectile point, quartsite, S-4.
16. Straight stemmed projectile point, chert, S-22.
17. Expanding stem projectile point, chert, S-32.
18. Straight stemmed projectile point, chert, S-25.
19. Contracting stem projectile point, quartzite, S-50.

100' by 150'. The following objects were recovered from the site:

Prehistoric objects:
3 End scrapers
2 Snub nosed end scrapers
1 Expanding stem projectile point base
1 Knife fragment
1 Shell fragment
261 Chert flakes
6 Quartzite flakes
1 Chert fragment

This yield, from this testing operation and from the surface collections made by Mr. Art Gillen (Fig. 10, 11, 13, No. 9, and Fig. 15, No. 1), warrants a recommendation that Gillen Site II undergo extensive excavation. Earth moving equipment could be used to remove the plow zone but the recoverable material that is found there, must be saved to give this site, apparently a single component, proper depth and scope.

Gillen Site III (Ve-121) is located in the NW-SW-SW-SW-SE ¼ of Section 15, T14N, R2W, on the west side of the Kickapoo River. The site is a rockshelter 40' long, 5' high, with an 8' overhang, and 3' of soil deposit. One five-foot test square was excavated to a depth of 3' and the rockshelter was found to be sterile. This rockshelter is not recommended for excavation.

Gillen Site IV (Ve-140) is located in the SE-NE-SW-SE ¼ of Section 15, T14N, R2W, on the north side of the junction of the first hollow south of STH 131 bridge. This rockshelter is on the west side of the Kickapoo River at the base of a bluff. The rockshelter is 30' long, 3'-6' high, with a 6' overhang, and over 4' of soil deposit. It faces west. One

KEY TO FIG 11: Lithic artifacts from the Gillen collection (Ve-51-0); (Scale is 5 cm.; artifacts are two-thirds natural size).

1. **Knife, chert, Ve-51-0, S-133**
2. **Knife, chert, Ve-51-0, S-131**
3. **Knife, quartzite, Ve-51-0, S-132**
4. **Celt, ground stone, Ve-51-0, S-122**
5. **Full-groved axe, Prairie du Chien dolomite, Ve-51-0, S-121**
6. **Slate pipe fragment, Ve-51-0, S-123**

five-foot test square was placed at the front of the rockshelter. This square was excavated to a depth of 2.2' and three features were uncovered in the 1.0' to 2.0' levels and excavated. Each level was dug in .4' levels since no natural stratigraphy was apparent at this site. Flakes and artifacts were found in all eight levels which descended to bedrock. One body sherd was found at the .8' to 1.2' level. In all, the following objects were recovered:

Prehistoric objects:
- 1 Grit tempered body sherd (Fig. 7, No. 20)
- 1 Quartzite chopper (Fig. 7, No. 21)
- 1 Quartzite knife (Fig. 7, No. 16)
- 11 Quartzite flakes
- 318 Chert flakes

In view of the three features and the yield from one five-foot test square, it is recommended that this rockshelter be fully excavated. The land in front of the rockshelter should be tested to ascertain if the rockshelter was only used in inclement weather or served as a more permanent shelter.

Gillen Site V (Ve-141) is located in the SW-NE-SW-SE ¼ of Section 15, T14N, R2W, at the first hollow south of the bridge at STH 131, on the east side of the Kickapoo River. This site is a rockshelter 100' long, 3' to 10' high, with a 10' overhang, and over 2' of soil deposit. This rockshelter faces east and has not been tested.

Gillen Site VI (Ve-142) is located in the SW-NE-SW-SE ¼ of Section 15, T14N, R2W, 150 yards SW of Ve-141 at the base of the bluff. This rockshelter is 25' long, 4' to 10' high, with a 10' overhang, and 2' of soil deposit. It faces south and has not been tested.

Gillen Site VII (Ve-164) is located in the SW-NW-SE-SW-SE ¼ of Section 15, T14N, R2W, on the north-northwest side of the farm pond on a high sandy ridge south of and adjacent to the Kickapoo River. Six five-foot squares were excavated in an east-west line. Testing operations indicated that this site is confined to an area approximately 75' square. Five of the test squares proved to be sterile of prehistoric material. The following objects were recovered from this campsite:

Prehistoric objects:
- 49 Grit tempered body sherds

1 Implement fragment
2 Worked flakes
1 Cut animal bone fragment
7 Animal bone fragments
19 Chert flakes
Historic objects:
52 Ceramic fragments
6 Square nails
1 .22 calibre shell

This 75' square area is recommended for full excavation to a depth of 3.0 feet, which is the depth of the zone of occupation. The site appears to be a single component, Woodland site and is, therefore, most important to understanding the cultural sequences of sites in the reservoir area.

Gillen Site VIII (Ve-176) is located in the SE-SE-SW-SW-NE ¼ of Section 22, T14N, R2W, on the second rise south of Ve-51, and north of and adjacent to the county road. This campsite is confined to an area 75' by 50'. Two five-foot squares were excavated on an east-west line. The soil consists of a plow zone .6' in depth, below which is a sterile, hard-packed, red clay. The site yielded only sixteen chert flakes, which were recovered from the plow zone. In view of the absence of artifacts and the lack of depth, it is recommended that there should be no further testing or excavation at Gillen Site VIII.

Gillen Site IX (Ve-177) is located in the NW-SE-SW-SW-NW ¼ of Section 22, T14N, R2W, on the first terrace of the Kickapoo River. This site is on a linear, sandy rise 200' by 50', and lies parallel to the river. Four five-foot test squares were excavated on a north-south line. Six features were found and two were excavated. The soil consists of a plow zone .7' in depth, a tan mottled sand .4' in depth, and a yellow sand .9' in depth. At a mean depth of 2.0' the yellow sand apparently becomes sterile. The site yielded the following material:

Prehistoric objects:
1 Raddatz Side-notched projectile point base (Fig. 7, No. 9)
2 Durst Stemmed projectile point bases (Fig. 7, No. 10)
1 Corner-notched projectile point fragment (Fig. 7, No. 11)

1 Fingernail impressed body sherd
3 Grit tempered body sherds
12 Implement fragments
5 Worked flakes
1 Shell fragment
2 Quartzite flakes
1,147 Chert flakes

It is recommended that extensive excavation be undertaken at Gillen Site IX. The testing operation indicates numerous features and a deep deposit.

Gillen Site X (Ve-178) is located in the SW-SW-NE-NW-NE ¼ of Section 22, T14N, R2W, on the first terrace of the Kickapoo River and 200 yards south of Ve-51. Two five-foot squares were excavated on an east-west line. One feature was located and excavated. The soil consists of a brown, sandy clay-loam plow zone .6' in depth, and a yellow, rocky clay beneath it, .4' in depth. The soil below this .4' yellow clay is apparently sterile. The site is confined to an area 100' square. This site yielded the following material:

Prehistoric objects:
1 Plano projectile point (Fig.'s 13, No. 16, and 15, No. 4).
1 Micro core
1 Worked flake
28 Chert flakes

In view of the possible late Paleo-Indian projectile point associated, in a feature, with a micro core and flakes, it is strongly recommended that this site undergo extensive excavation. It is believed that Gillen Site Ve-51, Ve-59, Ve-177, and Ve-178 will offer a possible sequence from Paleo-Indian to Woodland. The archaeological value of this complex of sites is of such a magnitude to make these five sites the most important ones found in the reservoir thus far.

Gillen Site XI (Ve-179) is located in the NE-NW-SW-SW-SW ¼ of Section 15, T14N, R2W, on the flood terrace of the Kickapoo River. This site is 300 yards west of Gillen site VII (Ve-164) and east of the Kickapoo River in a pasture area. The site is on a rise 200' by 75' extending in an east to west direction. Four five-foot squares were excavated. The soil consisted of an old plow zone .6' in depth, a mottled brown and tan sand .6' in depth, and a loose tan sand .5' in depth. Below the surface at a mean depth of 1.7 the soil ap-

pears to be sterile. The following objects were recovered from the site:

Prehistoric objects:
- 2 Plain body sherds
- 1 Worked flake — end scraper
- 9 Charred animal bone fragments
- 18 Animal bone fragments
- 57 Chert flakes

The yield from this testing operation warrants a recommendation that Gillen Site XI undergo extensive excavation.

Budde Site I (Ve-56) is located in Section 23, T14N, R2W, This village is outside the reservoir area.

Saunders Site I (Ve-58) is located in Section 14, T14N, R2W. This village site appears to be outside the reservoir area.

State of Wisconsin Site I (Ve-130) is located in the NE-SE-NE-SW ¼ of Section 14, T14N, R2W, on the east side of the Kickapoo River. The site is a rockshelter 20' long, 2' to 6' high, with a 5' overhang, and over 2' of soil deposit. This shelter was not tested.

State of Wisconsin Site II (Ve-131) is located in the SE-NE-NE-SW ¼ of Section 14, T14N, R2W, on the east side of the Kickapoo River and 200 yards north of VE-130. This site is a rockshelter 30' long, '5 high, with a 7' overhang, and over 2' of soil deposit. This rockshelter was not tested.

Woods Site I (Ve-54) is located in Section 10, T14N, R2W. This campsite is outside the reservoir area.

Woodard Site I (Ve-148) is located in Section 10, T14N, R2W. This rockshelter is outside the reservoir area.

Woodard Site II (Ve-149) is located in Section 10, T14N, R2W. This rockshelter is outside the reservoir area.

Woodard Site III (Ve-150) is located in Section 10, T14N, R2W. This campsite is located outside the reservoir area.

Woodard Site IV (Ve-162) is located in the NE-NW-NW-SE-NE ¼ of Section 10, T14N, R2W, immediately west of the hollow that begins northwest of the Woodard home and south of the Kickapoo River. This site is a rockshelter 50' long, 5' to 8' high, with a 10' overhang, with its floor at flood-plain level. This rockshelter faces north and has not been tested.

Collins Site I (Ve-161) is located in the NW-SE-NE-SW-NE ¼ of Section 10, T14N, R2W, at the base of the bluff on the south side of the Kickapoo River. This site is 300 yards east of STH 131 bridge. The site is a fissure cave that is 4' wide, 8' high, and 8' deep. This cave faces north and has not been tested.

Baltz Site I (Ve-155) is located in Section 2, T14N, R2W. This campsite is outside the reservoir area.

Baltz Site II (Ve-156) is located in Section 11, T14N, R2W. This campsite is located outside the reservoir area.

Baltz Site III (Ve-157) is located in Section 11, T14N, R2W. This campsite is located outside the reservoir area.

Baltz Site IV (Ve-158) is located in the SE-NW-NW-NW and the SW-NE-NW-NW ¼ of Section 11, T14N, R2W, on a sandy ridge southwest of an old barn immediately north of and parallel to the Kickapoo River. This village site is 500' east to west and 100' north to south. This village site yielded the following material from the surface:

Prehistoric objects:
- 1 Plano projectile point with concave base (Fig. 13, No. 18, and Fig. 16, No. 6)
- 1 Contracting stem projectile point (Fig. 6. No. 4)
- 2 Durst Stemmed projectile points (Fig. 6, No.'s 1 and 3)
- 1 Expanding stem projectile point
- 1 Side scraper (Fig. 6, No. 2)
- 4 Knives
- 3 Implement fragments
- 8 Worked flakes
- 2 Animal bone fragments
- 12 Quartzite flakes
- 342 Chert flakes

Historic objects:
- 1 Glass fragment

Gibson Site I (Ve-159) is located in the NE-NW-NW-NE-NW ¼ of Section 11, T14N, R2W, on a sandy terrace immediately SE of the corner of a lane to an old abandoned house. This site was in corn during survey and only two implement fragments and 22 chert flakes were found.

Baldwin Site I (Ve-53) is located in Section 2, T14N, R2W. This mound group is located outside the reservoir area.

Pittsin Site I (Ve-55) is located in Section 3, T14N, R2W. This village site is located outside the reservoir area.

Chandler Site I (Ve-52) is located in Section 3, T14N, R2W. This mound group is located outside the reservoir area.

In addition to sites discussed in this report, six sites lie outside the reservoir area, more than a mile from the edge of the maximum pool.

The following table should aid in the understanding of the number and nature of the sites that have been located since 1960:

TABLE 1
NUMBER OF SITES LOCATED, TESTED, AND TO BE EXCAVATED

Sites	In Pool	Tested	To Be Excavated	Out of Pool
Campsites	56	23	17	17
Worksites	6			
Villages	13	5	5	5
Rockshelters	44	16	3	8
Caves	1			1
Mounds	1	1	1	1
Petrogylphs				1
Totals	121	45	26	37

ARCHAEOLOGICAL CHRONOLOGY OF THE UPPER KICKAPOO VALLEY

Survey and testing operations have given us a small amount of information concerning the cultural complexes that make up the prehistory of the Upper Kickapoo Valley. While samples are limited, and distributions spotty, it is believed that a presentation of the available data will block out the chronology and cultural traditions of the prehistoric Indians who utilized and occupied the valley. This study, and future studies, will serve to contribute towards the understanding of separate regional traditions and their interaction with a number of distinct cultural complexes which can be traced to areas outside the Upper Kickapoo Valley. Evidence of the retention of techniques and styles considered diagnostic of these traditions and their degree of differential expression, will be considered, for each chronological period recognized

in the valley. Ecological adaption (Caldwell, 1958) will be commented upon, but the full manifestation of this adaption must await the results of full scale excavation. Extensive excavation, therefore, of the recommended sites, will hopefully establish a basis from which significant studies can and should emerge.

While a definitive study of the following periods must be held in abeyance, it is believed that the available data will indicate more than a presence or absence of specific archaeological complexes. Rather, it is believed, that data will be of a nature to direct possible future work while serving to indicate some of the problems that have arisen as a direct result of field and laboratory observations.

EARLY PALEO-INDIAN

In the last thirty years forms of early projectile points points have been reported as occurring in Wisconsin (Kuhm, 1934; Byers, 1942; Jones, 1948; Ritzenthaler and Scholz, 1951; Baerreis, 1953; Sugden, 1954; Nero, 1955; Dietz, 1956; Steinbring and Farvour, 1957; Mason and Irwin, 1960; Salzer and Stock, 1961; Ritzenthaler, 1962c, 1963a, 1963b; and Mason, 1963). These reports have been recently augmented by finds in Rock County (Richardson Site), Buffalo County (Broomer Site II), Monroe County (Silver Creek I), and by the numerous early materials in the Wisconsin museums. Figure 12 is a distribution map of Paleo-Indian projectile points. It is included here to give the reader an idea of the known distribution of early points reported for Wisconsin. The map indicates the area of apparent maximum concentration. Some gaps are unexplainable, i.e., Sauk and Columbia counties are adjacent to the counties of maximum finds and yet extensive surveys for the last thirty years have failed to turn up points that could be associated with Paleo-Indian. The solid line indicates the northern extension of these points. The present distribution may be influenced by the extent of archaeological work that has been conducted and by agricultural utilization. The area of greatest concentration is one in which extensive archaeological work has been conducted and in which agricultural settlement is the heaviest. These factors do not characterize the northern area.

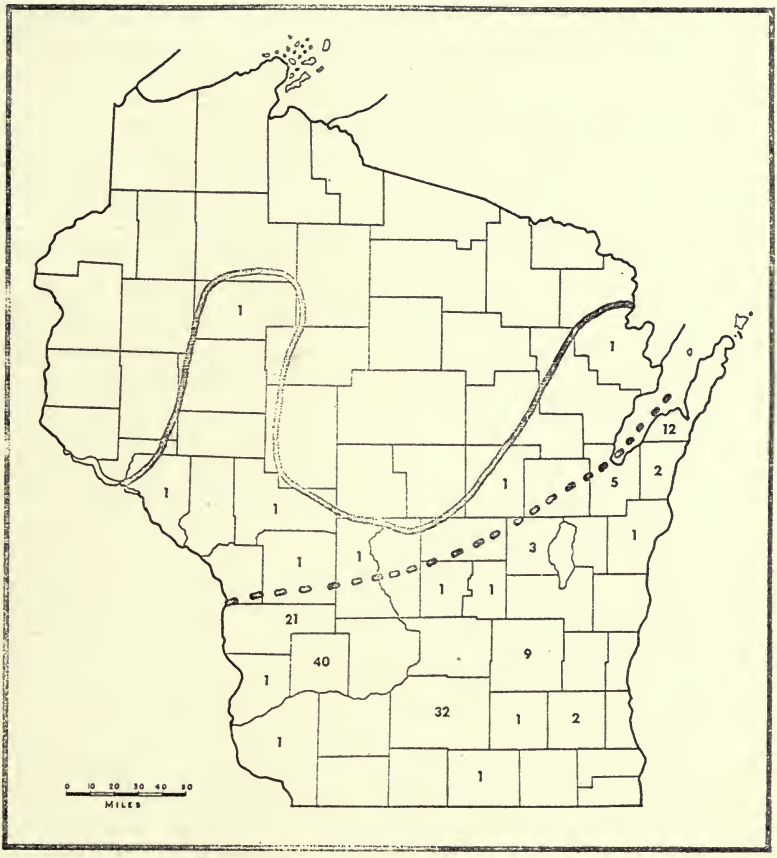


FIG. 12 Distribution map of Paleo-Indian points reported for Wisconsin

The 140 known Paleo-Indian projectile points make us increasingly aware of an early regional expression of Paleo-Indian occupation of the state that postdates the Cary substage of the Late Wisconsin Glacial stage of circa 14,000 B. P., andp redates the Valders substage of circa 11,000 B.P. (Haugh, 1958, Table 22, and p. 121). This regional occupancy apparently continued through the late Paleo-Indian period which lasted until circa 6,000 B. P. This continuum is represented by numerous surface finds in Wisconsin, and is amply manifested in the Upper Kickapoo Valley. Projectile points of this approximate period have been recovered from the surface of archaeological sites within the reservoir

area. It is believed, therefore, that this regional expression is probably within the temporal limits of 11,000 B. P. to 6,000 B. P.

CLOVIS PROJECTILE POINTS

Clovis projectile points are considered a hallmark of the Paleo-Indian period and were first found in the southwestern United States associated with butchered mammoth remains (Mason, 1962, p. 230). Geologic and radiocarbon dates place these remains and their associated points between 13,500 B. P. and 8,500 B. P. (**Ibid.**, p. 230). Clovis points found in the Eastern United States have not been dated within the initial segment of this range but their widespread distribution indicates considerable time depth. Their presence in Wisconsin has long been noted (p. 92) and their occurrence in the ice free, Driftless Area is estimated to be between circa 11,000 and 6,000 B. P. Quimby (1960, pp. 30-32) believes early man entered the Upper Great Lakes area along with the browsing mastodons, giant beaver, deer, elk, and caribou. With open prairies and extensive woodlands, these early hunters could dispatch these animals with impunity. The main implement used for hunting was the fluted Clovis point, described by H. M. Wormington (1957, p. 263) as:

> "Fluted lanceolate points with parellel or slightly convex sides and concave bases. They range in length from one and a half to five inches, but are usually some three inches or more in length and fairly heavy. The flutes sometimes extend almost the full length of the point but usually they extend no more than half way from the base to the tip. Normally, one face will have a longer flute than the other. The fluting was generally produced by the removal of multiple flakes. In most instances the edges of the basal portion show evidence of smoothing by grinding . . ."

Clovis projectile points exhibit fluting techniques of two varieties. The first has been described by Witthoft (1952, pp. 482-483) as triple-channel or Enterline:

> "When a thick-based blank has been roughed out and the preliminary shaping completed, basal thinning was started. In most cases, this began with the removal of two smaller channel flakes from one face of the blank, by blows midway between the center of the blank base and the basal corners. In some cases . . . these flakes

were small, but on other examples they are quite large. The removal of these flakes served to isolate the central part of the base as the striking platform for the removal of the central channel flake. In many cases the removal of this central flake obliterated all traces of the smaller flutes, but very often conspicuous remnants of one or both were left on the finished point."

Fluting from a straight or slightly convex base has been described by Mason (1958, p. 12) as the:

". . . preparation of the fluting striking platform by means of beveling the base. It appears that the original basal edge of the prefluted projectile point was straight, or even sometimes slightly convex. This edge was beveled over the plane of one of the faces (probably by light percussion blows), and a striking platform was thus established. At this point, a carefully directed blow detached the fluting spall from the face. Since this blow scattered parts of the edge, and the channel flake thus removed carried away with it the striking platform, the basal edge assumed a rough but definitely concave form. In order to flute the opposite face, the basal edge had to be reworked and beveled accordingly and a new striking platform prepared. In some instances the initial fluting so deepened the base or left such a deep negative bulb that fluting the opposite face was not feasible. . . . If the original fluting had not so negated the feasibility of bifacial fluting, a flute was then produced on the opposite face, further shattering and deepening the basal concavity. . . . After completion . . . the basal edge was trimmed by fine pressure-retouch. This was usually followed by pronounced grinding, not only at the base but also on the tang edges and laterally up the blade."

Morphological and technological similarities between Clovis points and the points recovered from two archaeological sites within the reservoir (Frye Site I, Ve-41, and Hanson Site II, Ve-167) suggest that these points be placed within the Clovis group (See Mason, 1963, pp. 199-200). The following four projectile points are designated as Clovis points and their descriptions are as follows:

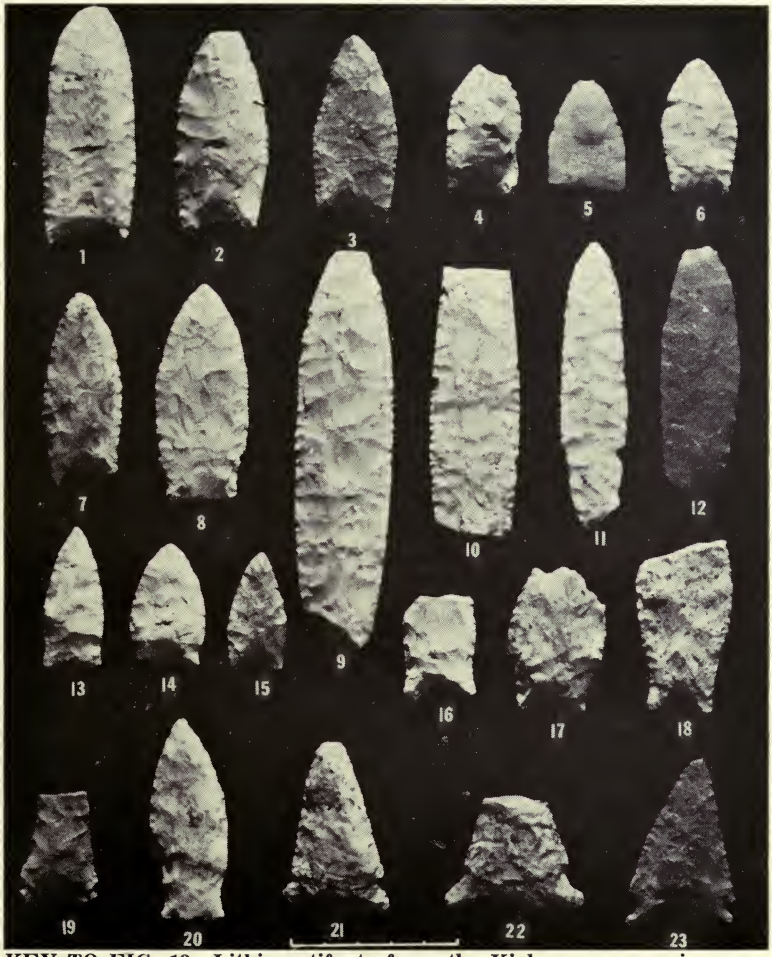
1) Ve-167-O-S-1 (Fig. 13, No. 1, and Fig. 14, No. 1). Recovered from the surface of Hanson Site II (Fig. 2, Map 2). The material is mottled pink and white chert. The upper one-half of the point is lenticular in cross section and the lower is biconcave. The specimen is parallel-sided with the

greatest width near the middle of the blade. The blade edges constrict gradually to the tip and basal tangs. Blade edges are alternately beveled. Both faces have been fluted according to the Enterline technique. Basal thinning and grinding is evident. Horizontal, parallel flaking is poorly controlled on this specimen (see Table II for pertinent metrical data).

2) Ve-41-O-S-12 (Fig. 13, No. 2, and Fig. 14, No. 2). This specimen was recovered from the surface of Frye Site I (Fig. 5, Map 3). The material is fine chert. The specimen is plano-convex in cross section and pentagonal in outline with the greatest width at the shoulders. On the obverse (face pictured to the right, Fig. 14, No. 2), Enterline fluting terminates in a hinge fracture as do all flutes on the four specimens, while on the reverse, plane face flaking is not as well executed and the flute is closer to the right edge. The base has been thinned and ground, and the tip shows impact damage. Horizontal, parallel flaking is better controlled than on specimen No. 1 (See Table II).

3) Ve-41-O-S-6 (Fig. 13, No. 4, and Fig. 14, No. 4). Recovered from the surface of Frye Site (Fig. 5, Map 3). The material is mottled grey-black chert. This parallel-sided point is biconcave in cross section in the lower one-half and lenticular in the upper one-half. The greatest width is close to the middle of the blade and the blade edges converge abruptly towards the tip. Both faces have been fluted by the Enterline technique. The base and lateral blade edges are ground and the base has been thinned. The tip shows impact damage. Horizontal, parallel flaking is average (see Table II).

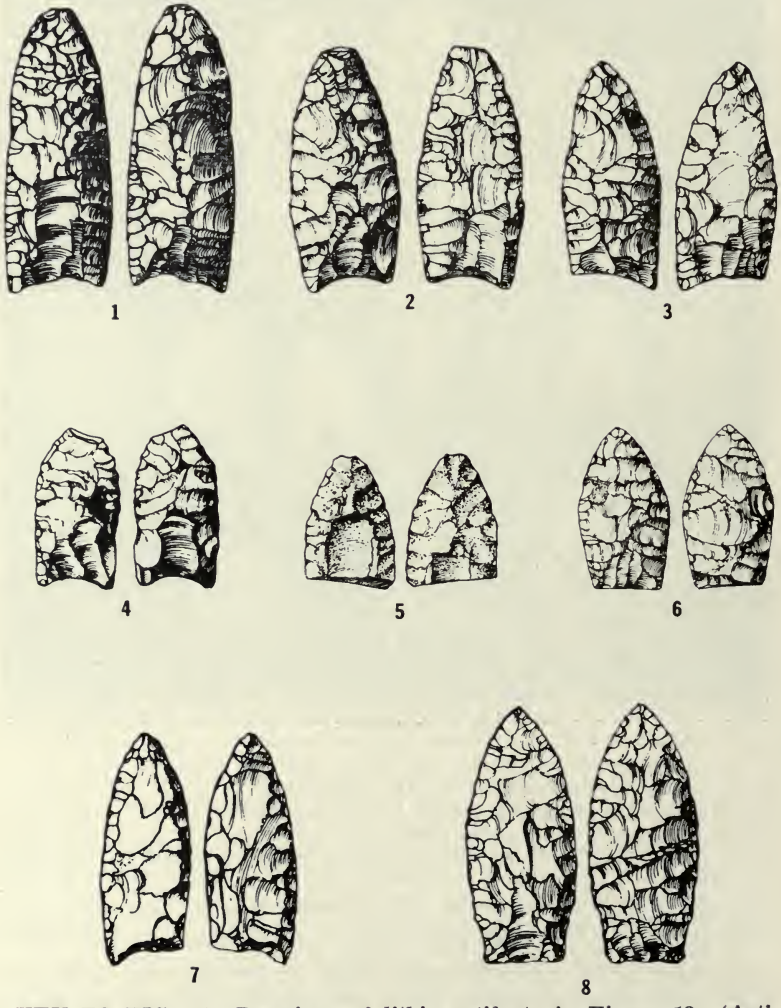
4) Ve-41-O-S-4 (Fig. 13, No. 5, and Fig. 14, No. 5). Recovered from the surface of Frye Site I (Fig. 5, Map 3). The material is tan quartzite. The distal fragment appears to have been parallel-sided with some transverse flaking in evidence. This specimen is biconcave in cross section and has lateral blade-grinding extending to a point at which the blade edges converge toward the tip. Fluting technique in this case is unknown (See Table II).



KEY TO FIG. 13. Lithic artifacts from the Kickapoo reservoir area: (Scale is 5 cm.; artifacts approx. two-thirds natural size).

1. **Clovis projectile point, chert, Ve-167-0-E-1.**
2. **Clovis projectile point, chert, Ve-41-0-S-12.**
3. **Plainview projectile point, chert, Ve-169-0-S-1.**
4. **Clovis projectile point, chert, Ve-41-0-S-6.**
5. **Distal fragment of Clovis projectile point, quartzite, Ve-41-0-S-4.**
6. **Midland projectile point, chert, Ve-41-0-S-9.**
7. **Plainview projectile point, chert, Ve-41-0-S-7.**
8. **Lanceolate projectile point, chert, Ve-62-0-S-5.**
9. **Agate Basin projectile point, chert, Ve-51-0-S-13.**
10. **Agate Basin projectile point, chert, Ve-41-0-S-3.**
11. **Agate Basin projectile point, chert, Ve-41-0-S-2.**
12. **Agate Basin projectile point, quartzite, Ve-41-0-S-1.**

13. Stemmed projectile point, chert, Ve-41-0-S-6.
14. Stemmed projectile point, chert, Ve-41-0-S-9.
15. Stemmed projectile point, chert, Ve-41-0-S-15.
16. Concave based projectile point, chert, Ve-178 Pl (-25R150)-1.
17. Concave based projectile point, chert, Ve-41-0-S-13.
18. Concave based projectile point, chert, Ve-158-S-1.
19. Side-notched projectile point, chert, Ve-41-0-S-19.
20. Expanding stem projectile point, chert, Ve-41-0-S-14.
21. Oconto projectile point, chert, Ve-41-0-S-145.
22. Oconto projectile point, chert, Ve-41-0-S-138.
23. Oconto projectile point, chert, Ve-41-0-S-151.



KEY TO FIG. 14. Drawings of lithic artifacts in Figure 13; (Artifacts approx. two-thirds natural size).

1. **Clovis projectile point, chert.**
2. **Clovis projectile point, chert.**
3. **Plainview projectile point, chert.**
4. **Clovis projectile point, chert.**
5. **Distal fragment of Clovis projectile point, quartzite.**
6. **Midland projectile point, chert.**
7. **Plainview projectile point, chert.**
8. **Lanceolate projectile point, chert.**

MIDLAND PROJECTILE POINTS

Midland projectile points are described by Wormington as:

> "Points which were originally called 'Unfluted Folsoms' because they closely resemble Folsoms as regards shape, size, and general method of flaking, but are very thin and unfluted. Some resemblances to Plainview are also apparent, but, in general, these specimens are smaller, thinner, flatter, and narrower" (1957, p. 263).

These points have been found in association with a human calvarium, 7 Folsom points, a Milnesand point, and a Meserve point. Associated faunal remains are: extinct horse, extinct antelope, and extinct bison. The point was named after the type site at Midland, Texas. The Midland point is generally conceded to be pre-8,000 B. P. and may be contemporaneous with Plainview points of 9,500 to 6,000 B. P. (Ibid., pp. 244-246), One Midland point was recovered from Frye Site I (Ve-41).

5) Ve-41-O-S-9 (Fig. 13, No. 6, and Fig. 14, No. 6). Recovered from the surface of Ve-41 (Fig. 5, Map 3). The specimen is made from mottled white chert. It is lanceolate in outline and lenticular in cross section. Excellent trans-

TABLE II

MEASUREMENTS (IN MILLIMETERS) OF KICKAPOO FLUTED POINTS

No.	Fig. 13 No.	Material	Blade Length	Max. Width	Max. Thickness	Extent Lateral Grinding	Basal Width	Basal Depth	Fluting Scar Length Obverse	Fluting Scar Length Reverse	Multiple Channel Scars
1.	1	Chert	73.5	28.5	8.5	25.0	25.0	2.0	25.5	13.5	X
2.	2	Chert	61.0	28.5	8.0	23.0	22.5	2.5	23.0	17.0	X
3.	4	Chert	40.0	22.5	7.0	19.0	19.5	2.0	15.0	17.0	X
4.	5	Quartzite	(33.5)	23.0	7.0	(14.0)	...	...	(14.0)	(6.0)	....

( ) = Actual dimensions of broken specimen
X Signifies feature present

verse flaking and fine basal retouching have thinned this specimen to 5.5 mm. Basal and lateral edges are not heavily ground and the greatest width is close to the middle of the blade (See Table III).

Wormington (1957, p. 263) and Mason (1962, p. 231) have suggested that Midland points were possibly too thin for detachment of the channel flakes. This specimen is thick enough for fluting but an intrusive chert band near the base would have caused the specimen to break were fluting attempted.

LATE PALEO-INDIAN

The Late Paleo-Indian period of circa 8,000 to 6,000 B. P. is characterized by the appearance of well-made, lanceolate projectile points. These points have been found on the Plains associated with extinct and modern bison. Lanceolate points are unfluted and are stratigraphically above the Clovis and Folsom points. In the Plains, this tradition is subsumed under the name Plano, but Quimby in 1960 (pp. 34-42) suggested the term Aqua-Plano for those specimens found in the Upper Great Lakes region. Numerous point types are included under the Late Paleo-Indian heading and two of these point types, and varieties thereof, have been recovered from the Upper Kickapoo Valley. They are: Plainview, Agate Basin, Lanceolate, and concave-based points. These four varieties are ordered according to their apparent chronological position, but, they may have been contemporaneous with one another and survived into the Archaic period (Davis, 1962, pp. 91-96).

PLAINVIEW PROJECTILE POINTS

> The Plainview projectile points are described by Davis as: ". . . thin lanceolate points averaging 60 to 70 mm. in length. The base is straight to concave, the sides are roughly straight and parallel, and the tip is short and rounded or long and tapering. The flaking is well executed and parellel or irregular. Parallel flaking on these points may be collateral, transverse, or oblique, but at no one site have good examples of all three of these techniques occurred. The proportion of breadth to length is about 1.3, and of thickness to breadth about 1:4" (**Ibid.**, p. 84).

Five Plainview points have been recovered from the surface or archaeological sites within the reservoir. Projectile points 6, 7, and 8, are distal fragments that exhibit characteristics of Plainview projectile points (Mason, personal communication). Projectile points 9 and 10 are provisionally placed within the Plainview category. These points are thick in cross section and are probably regional variants of the classic Plainview type. These two points are similar to the Plainview specimens recovered by E. Mott Davis from the Lime Creek Site, Nebraska (1962, p. 59, a; p. 71; and p. 72, Fig. 30).

6) Ve-51-O-S-18 (Fig. 10, No. 1). Distal end recovered from the surface of Gillen Site II (Fig. 9, May 4). This specimen is made from fine grey chert. It is lanceolate in outline and lenticular in cross section. Fine transverse flaking and edge retouching is found on both sides. Both lateral edges are ground and the greatest blade width is close to the tip. Blade edges converge towards the base (See Table III).

7) Ve-62-O-S-111 (Fig. 3, No. 2). Distal end fragment recovered from the surface of Trappe Site III (Fig. 2, Map 2). The material is fine grey chert. It is lanceolate in outline and lenticular in cross section. Both faces exhibit fine, transverse flaking. Lateral edges are ground and the maximum blade width is close to the middle of the blade. The blade edges converge towards the base (See Table III).

8) Ve-169-O-S-13 (Fig. 4, No. 1). Distal fragment recovered from M. Hopkins Site V (Fig. 2, Map 2). The specimen is made from fine grey chert. It is lanceolate in outline and lenticular in cross section. The obverse face has fine, flat, slightly oblique flaking and the reverse face has flat transverse flaking. Both lateral edges are ground and the maximum blade width appears to lie near to the top (See Table III).

9) Ve-169-O-S-1 (Fig. 13, No. 3, and Fig. 14, No. 3). This point was recovered from the surface of M. Hopkins Site V (Fig. 2, Map 2). The point is made from mottled grey chert and is thick in cross section. Transverse flaking is of fair quality and well defined on the obverse face. There is a well defined, concave base of 2.5 mm., which has been

thinned. Basal and lateral edge grinding is extensive. The greatest width is close to the middle of the blade (See Tabl III).

10) Ve-41-O-S-7 (Fig. 13, No. 7, and Fig. 14, No. 7). Recovered from the surface of Frye Site I (Fig. 5, Map 3). The material is mottled grey chert. This lanceolate point is thick in cross section and the blade edges converge slightly towards the base. The specimen has flat, irregular flaking; a well defined concave base of 3.0; and slight basal thinning. Basal and lateral edge grinding is minimal and the greatest width is close to the middle of the blade (See Table III).

AGATE BASIN PROJECTILE POINTS

Agate Basin points were defined by Frank H. Roberts in 1943. These points are similar, technologically and temporally, to the lanceolate, Angostura type, but Agate Basin points appear to be much larger. The Agate Basin point is characterized by: bases that are straight to convex; transverse flaking; fine, marginal retouch; grinding of the lateral edges; and slight basal grinding and retouch. In Wyoming they have been found associated with modern and/or extinct bison at a bison-kill site. Two sites in the Upper Kickapoo Valley have yielded Agate Basin points from the surface.

11) Ve-51-O-S-13 (Fig. 13, No. 9, and Fig. 15, No. 1). Recovered from the surface of Gillen Site II (Fig. 9, Map 4). The point is lanceolate in outline and lenticular in cross section. Both faces exhibit fine, transverse flaking. Distal and basal ends have been fractured. The blade edges are heavily ground. The material is fine white chert. The greatest width is close to the middle of the blade (See Table III).

12) Ve-41-O-S-3 (Fig. 13, No. 10, and Fig. 15, No. 2). Recovered from the surface of Frye Site I (Fig. 5, Map 3). This mid-section exhibits fine, transverse flaking on both faces. The material used is mottled, cream chert. Blade edges are heavily ground. The point is lanceolate in outline and lenticular in cross section. Greatest width is close to the middle of the blade (See Table III).

13) Ve-41-O-S-2 (Fig. 13) No. 11, and Fig. 15, No. 3). Recovered from the surface of Frye Site I (Fig. 5, Map 3). The material used is fine white chert. This specimen is lance-

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KEY TO FIG. 15. Drawing of lithic artifacts in Figure 13; (Artifacts approx. two-thirds natural size).

9. Agate Basin projectile point, chert.
10. Agate Basin projectile point, chert.
11. Agate Basin projectile point, chert.
12. Agate Basin projectile point, quartzite.

olate in outline and plano-convex in cross section. The obverse face has fine transverse flaking, the reverse face has flat irregular transverse flaking and four facets have been twisted off the left blade edge. Blade edges are ground and the maximum width is close to the middle of the blade (See Table III).

14) Ve-41-O-S-1 (Fig. 13, No. 12, and Fig. 15, No. 4). Recovered from the surface of Frye Site 1 (Fig. 5, Map 3). Material is a dark, tan quartzite. Flaking on both faces is transverse, tending to oblique. The specimen is lanceolate in outline and lenticular in cross section. Lateral and basal grinding is minimal. The maximum width is close to the middle of the blade (See Table III).

LANCEOLATE PROJECTILE POINTS

Five lanceolate projectile points have been recovered from the surface of archeological sites within the reservoir area. These speciments exhibit characteristics that are representative of Late Paleo-Indian projectile points, i. e., collateral flaking, fine oblique and transverse flaking, basal and lateral edge grinding, fine basal thinning, etc., but they are morphologically difficult to place within the known Late Paleo-Indian categories. Therefore, they will be described and reference will be made to possible relationships to known types. It is believed that these points are regional variants of Late Paleo-Indian point types.

15) Ve-62-O-S-52 (Fig. 3, No. 1). Recovered from the surface of Trappe Site III (Fig. 2, Map 2). This specimen is made from light tan quartzite. Deep, collateral flaking, on both faces, has caused the blade edges to exhibit pronounced sinuousness. The flaking technique is similar to the techniques used on Eden projectile points. Impact fracture has removed the tip. This speciment has a straight stem, and the stem and laterial blade edges have been heavily ground. The blade is lanceolate in outline and lenticular in cross section. Greatest blade width is close to the middle of the blade (See Table IV).

TABLE III

MEASUREMENTS (IN MILLIMETERS) OF LATE PALEO-INDIAN POINTS

No.	Fig. No.	Blade Length	Maximum Width	Maximum Thickness	Extent Lateral Grinding	Stem Length	Stem Width	Base Width	Type
5.	13 : 6	41.0	23.0	5.5	22.0	...	...	17.5	Midland
6.	10 : 1	(55.0)	22.0	5.5	(20.0)	...	...	....	Plainview
7.	3 : 2	(57.0)	28.5	7.0	(23.0)	...	...	....	Plainview
8.	4 : 1	(40.5)	19.0	3.5	(20.0)	...	...	....	Plainview
9.	13 : 3	58.0	25.0	7.5	27.5	...	...	22.0	Plainview
10.	13 : 7	59.0	24.0	7.5	15.0	...	...	20.0	Plainview
11.	13 : 9 15 : 1	(119.0)	29.5	8.5	(58.5)	...	...	(19.0)	Agate Basin
12.	13 : 10 15 : 2	(80.5)	26.5	8.0	(40.0)	...	...	.....	Agate Basin
13.	13 : 11 15 : 2	(86.5)	20.5	5.5	(20.0)	...	...	.....	Agate Basin
14.	13 : 12 15 : 4	(73.5)	23.5	7.5	11.0	...	...	.....	Agate Basin

( ) = actual dimensions of broken specimens

16) Ve-62-O-S-5 (Fig. 13, No. 8, and Fig. 14, No. 8). This specimen is similar to the Scottsbluff Type I variety but it does not have the fine workmanship of these points. This specimen was recovered from the surface of Trappe Site III (Fig. 2, Map 2), and is made from a light grey chert. Both faces are irregularly flaked. The obverse face has basal thinning scars extending 20.5 mm. from the base. The point is lanceolate in outline and lenticular in cross section. Grinding and blade edge retouch have produced a slight stem with a straight base. Greatest blade width is close to the middle of the blade. (See Table IV).

17) Ve-41-O-S-106 (Fig. 8, No. 1). This distal fragment is similar to the Plainview fragments. This specimen was recovered from the surface of Frye Site I (Fig. 5, Map 3). The material is mottled grey chert. Both faces have been flaked by careful, flat, oblique flaking techniques. Lateral edges are ground and the greatest width is close to the middle of the blade (See Table IV).

18) Ve-169-O-S-8 (Fig. 4, No. 2). Recovered from the surface of M. Hopkins Site V (Fig. 2, Map 2). This specimen is made from mottled pink chert. It is lanceolate in outline and thin in cross section. The obverse face exhibits fine, oblique flaking. Basal thinning has resulted in hinge scars

13.5 mm. from the apex of the base. The reverse face has fine, transverse flaking and basal thinning has left hinge scars 9.0 mm. from the apex of the base. Both lateral edges exhibit fine, pressure retouch. The basal concavity is slight (1.5 mm.) and is slightly ground. Maximum blade width is close to the base (See Table IV).

19) Ve-169-O-S-82 (not illustrated). Recovered from the surface of M. Hopkins Site V (Fig. 2, Map 2). The specimen is made from mottled cream chert. Both faces have flat, oblique flaking but it is poorly controlled. The reverse face has a hinge scar 14.0 mm. from the base that has resulted from basal thinning. The point is lanceolate in outline and lenticular in crosss ection. Lateral blade edge grinding is minimal. Impact fracture has removed a spall from the tip. The maximum width is close to the middle of the blade (See Table IV).

CONCAVE BASED PROJECTILE POINTS

The Paleo-Indian stage does not automatically terminate at circa 5,000 B.P. Traits and complexes continued and this continuum is becoming increasingly more well known (DeJarnette, **et. al.,** 1962). Prufer and Baby, though, see no transition in Ohio to an Archaic tradition (1963, p. 4). But, side-notched and other points found at Midoc Rock Shelter in Illinois (Fowler, 1959a); Graham Cave in Misouri (Logan, 1952); and at the Simonsen bison-kill site in Iowa (Frankforter and Agogino, 1959), suggest an overlap of the Paleo-Indian and Archaic stages. For Wisconsin, Nero (1955, p. 145) suggests that the Havey Site ". . . shows resemblance to Late Paleo-Indian and Early Archaic complexes and may well represent a transitional culture." The Havey fluted and lanceolate projectile points, gravers, ground-edge scrapers, etc., certainly represent a Paleo-Indian occupation. Side-notched points, at the Havey Site, appear to represent the beginnings of an Archaic tradition. Wittry (1959b, p. 251) suggests that diminutive scrapers from the Durst Site may belong to a preside notched point culture. Mason and Irwin (1960) have recovered Eden and Scottsbluff projectile points associated with a side-notched point at the Renier Site. Baerreis (1953, pp. 161-163) has recovered lanceolate projectile points and Madison Side Notched projectile points associated with gravers

from the Airport Village Site. He suggests an occupation beginning circa 2,000 B.C. (4,000 B.P.).

The temporal and spatial placement of the Oconto, Raddatz, Madison Site Notched, and Osceola projectile points, will be discussed in the section of this paper dealing with the Archaic period. It is suggested that concave base, lanceolate points (Fig. 4, No. 3; Fig. 10, No. 4; Fig. 13, No.'s 16, 17, and 18; and Fig. 16, No.'s 16, 17, and 18) also are part of the Late Paleo-Indian tradition and continue into the Archaic. One oblique flaked side-notched projectile point (Fig. 13, No. 19, and Fig. 16, No. 19) is also placed within this period. The concave base, lanceolate projectile points bear a strong resemblance to other early points, i.e., Cumberland points (in outline), Wheeler points, McKean points (Bell, 1958, p. 51, and 1960, pp. 23, 81, and 94), and Nutimik concave points (MacNeish, 1958, pp. 93-99).

Snub-nosed scrapers, single and multiple spurred scrapers, worked flake tools, gravers, and possibly burins, from the Upper Kickapoo Valley, are included as part of the stone tool assemblages of the Paleo-Indian, and Archaic periods. Specific temporal placement is not possible at this time, but, varieties of these tools have been recovered, in the Kickapoo Valley, from the surface and in excavations of archaeological sites that belong to these periods. Further testing and full-scale excavations will undoubtedly enable us to place these tools within their proper assemblages.

The following six specimens are provisionally placed within the Late Paleo-Indian period. These points may have lasted well into the Archaic period. They are described as follows:

20) Ve-178-F-1 (25R150)-1 (Fig. 13, No. 16, and Fig. 16, No. 16). Recovered from a refuse pit at Gillen Site X (Fig. 9, Map 4) associated with a worked flake and a possible microcore (p. 86). The specimen is made from mottled, light grey chert. Both faces exhibit irregular flaking. It is lanceolate in outline and lenticular in cross section. The blade edges have been pressure-retouched and the base is thinned. The base and lateral blade edges have been lightly ground. The tip shows impact damage. The greatest width is close to the middle of the blade (See Table IV).

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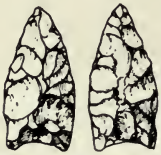

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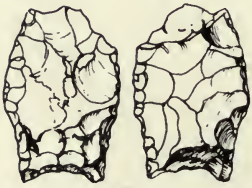

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KEY TO FIG. 16. Drawings of lithic artifacts in Figure 13; (Artifacts approx. two-thirds natural size).

13. Stemmed projectile point, chert.
14. Stemmed projectile point, chert.
15. Stemmed projectile point, chert.
16. Concave based projectile point, chert.
17. Concave based projectile point, chert.
18. Concave based projectile point, chert.
19. Side notched projectile point, chert.
20. Expanded stem projectile point, chert.

21). Ve-51-O-S-15 (Fig. 10, No. 4). Recovered from the surface of Gillen Site II (Fig. 9, Map 4). The material is mot-

tled grey-cream chert. Both faces are irregularly flaked and have pressure retouch along the edges. The specimen is lanceolate in outline and thick in cross section. The base has been thinned. No grinding is evident. The tip has impact damage. The greatest width is close to the middle of the blade (See Table IV).

22) Ve-169-O-S-3 (Fig. 4, No. 3). Recovered from the surface of M. Hopkins Site V (Fig. 2, Map 2). The material is cream chert. The specimen is lanceolate in outline and lenticular in cross section. Both faces have fair transverse flaking. Basal and lateral edges have been ground and both have been pressure retouched. The greatest width is close to the middle of the blade (See Table IV).

23) Ve-41-O-S-13 (Fig. 13, No. 17, and Fig. 16, No. 17). Recovered from the surface of Frye Site I (Fig. 5, Map 3). The specimen is made from mottled pink and grey chert. It is concavo-convex in outline and thick in cross section. Irregular flaking is poorly controlled. The base and lateral edges have minimal grinding and the obverse base has been thinned. The maximum width is close to the base. The tip shows impact fracture (See Table IV).

24) Ve-158-S-1 (Fig. 13, No. 18, and Fig. 16, No. 18). Recovered from the surface of Baltz Site IV (Fig. 9, Map 4). The material is mottled pink-cream chert. It is concavo-convex in outline with a thick, lenticular cross section. Blade edges converge sharply towards the base. Maximum blade width lies near the tip of the point. The tip shows impact damage. Lateral and basal edges exhibit fine pressure retouch. Both faces are irregularly flaked. Basal and lateral edge grinding is minimal (See Table IV).

25) Ve-41-O-S-19 (Fig. 13, No. 19, and Fig. 16, No. 19). Recovered from the surface of Frye Sitie I (Fig. 5, Map 3). This side-notched point is made from dark grey chert and both faces exhibit fine, flat, oblique flaking. The notches are close to the base, which is straight. Both the basal and lateral edges have been heavily ground and have fine pressure retouch. The tip is missing. The base is the widest point on the specimen. It is parallel-sided in outline and lenticular in cros section (See Table IV).

TABLE IV

MEASUREMENTS (IN MILLIMETERS) OF LATE PALEO-INDIAN POINTS

No.	Fig. No.	Length	Maximum Width	Maximum Thickness	Extent Lateral Grinding	Stem Length	Stem Width	Base Width	Basal Depth	Type
15.	3 : 1	(56.5)	19.5	7.5	(36.5)	(8.0)	11.0	(9.0)	...	Lanceolate
16.	13 : 8 14 : 8	66.0	28.5	5.5	14.5	R.14.5 L.11.5	21.0	20.5	...	Lanceolate
17.	8 : 1	(41.0)	21.5	6.5	(16.0)	...	...	....	...	Lanceolate
18.	4 : 2	46.0	21.5	5.5	....	...	...	16.0	...	Lanceolate
19.	.....	(51.5)	18.0	6.5	(13.0)	...	...	7.0	...	Lanceolate
20.	13 : 16 16 : 16	(18.5)	21.5	7.0	16.0	16.5	19.5	21.5	4.0	Concave Lanceolate
21.	10 : 4	(31.0)	22.5	8.5	....	10.5	19.5	21.5	4.5	Concave Lanceolate
22.	4 : 3	33.5	18.5	7.5	17.0	8.5	17.0	18.5	3.5	Concave Lanceolate
23.	13 : 17 16 : 17	(27.0)	29.0	9.0	14.0	19.0	23.5	21.0	2.5	Concavo-Convex
24.	13 : 18 16 : 18	(31.0)	29.0	8.5	12.0	22.0	19.5	19.5	4.0	Concavo-Convex
25.	13 : 19 16 : 19	(26.5)	23.5	8.0	19.5	9.0	22.5	23.5	...	Side Notched

( ) = Actual dimensions of broken specimens

ARCHAIC

The Archaic period of circa 5,000 B.P. to 3,000 B.P. is characterized by a diversity of chipped stone forms and a greater utilization of the environment. Adaptation to local conditions in the Eastern United States resulted in several regional varieties or sub-traditions of the Archaic stage. The lanceolate and concave based projectile points appear to survive and fuse with resident Archaic complexes. The complexes have ground and polished stone tools, bone tools, side-notched and stemmed projectile points, gravers, copper artifacts, gorgets, pendants, and a wide variety of stone drills and knives. In the Upper Mississippi Valley some of these regional variations are quite distinct (Mayer-Oakes, 1960) but a full manifestation of this regional Archaic is to be found in Wisconsin (pp. 112-113). Possibly the earliest and best known manifestation is the Old Copper Culture.

The term Old Copper and the concept of an Old Copper Culture was first proposed by W. C. McKern in 1942. This culture had utilitarian implements of copper which were not related to the then known local cultural manifestations. McKern has hypothesized a perceramic culture (pre-Woodland) that occupied an early time horizon. He based his formulations on two factors: 1) the discovery of copper implements in a pre-pottery (Laurentian) level in the Northeast United

States and, 2) the occurence of over 20,000 copper implements in the Eastern United States, the majority of them being found in the State of Wisconsin. McKern believed that this copper-using culture was centered in Wisconsin and that tools and concepts of making them spread into adjacent areas.

The largest and richest sources of native copper in North America are found on the Northwest edge of Lake Superior. Isle Royale and the Keweenaw Peninsula are dotted with thousands of pits marking the extensive mining carried on by the prehistoric Indians in their search for copper. Glacial action has also carried large drift copper, or float copper, from Canada, Isle Royale, and the Keweenaw Peninsula into Wisconsin. This float copper was probably the first source of metal of the prehistoric Indians. It was readily available and easy to locate on the surface. The concept of mining came later, and the methods employed by the prehistoric Indians were simple, but extremely laborious. The methods of manufacture employed were initially cold hammering, and later annealing. The finishing methods consisted of cutting and trimming uneven edges with sharp implements and smoothing surfaces by rubbing or grinding with sandstone or other stones.

With the knowledge of the techniques used and the primary sources of native copper located, the hypothesis formulated by McKern remained untested until 1945. During the summer of 1945, the Old Copper site of Osceola was excavated (Ritzenthaler, 1946). Forty Old Copper implements and ornaments, well-made chipped stone implements, pottery, and a burial population estimated at about 500 individuals, were assigned to the complex. The Osceola projectile points have been described by Mason and Mason (1961, p. 149), as:

> ". . . basically lanceolate in shape, parallel-sided with comparatively broad blades. The bases tend to be squared and fairly massive with the lateral edges of the tang ears tending to be insloping toward the bases themselves; the characteristic basal treatment is deep "u"-shaped side-notching, in most cases at right angles to the long axes of the points. Basal edges are slightly to markedly concave in the larger specimens, more often straight in the smaller ones . . . . In length the Osceola points range from an estimated 210 mm. to 57 mm. with the average

> length of 98 mm.; they range in width from about 48 mm. to 23 mm. with an average of 29 mm. . . . All of the Osceola points examined are made of chert, ranging from banded rose chert to solid gray and solid white. Workmanship ranges from good to excellent with a few examples of rough flaking and careless retouch. In no case were any of the basal or lateral edges of any of these points ground smooth."

A radiocarbon date measured on the organic carbon of the bone specimens submitted, yielded a date of 3450 + or - 250 B.P. (M-643). Numerous Osceola points have been recovered from the surface of archaeological sites within the reservoir area. A few are illustrated (Fig. 3, No. 7; Fig. 4, No. 5, and Fig. 5, No.'s 17, 18, and 21). Lewis and Lewis (1961, pp. 34-37) have excavated a projectile point type in Tennessee, which they call Big Sandy Side Notched. They believe it is contemporaneous with the Osceola type. While it may be morphologically similar; the dates of 6,000 to 5,000 B.P. do not concur with the Osceola date. A possible closer relationship can be drawn to the Otter Creek Points, of Vermont. These points (Ritchie, 1961, pp. 40-41) and the Osceola points appear to be temporally and morphologically similar.

During the summer of 1952, the Old Copper site at Oconto, Wisconsin, was excavated (Ritzenthaler and Wittry, 1956). Forty-five individuals were uncovered and twenty-six copper artifacts were found associated with the burials. The stone projectile points recovered have been described by Mason and Mason (1961, pp. 149-150) as:

> ". . . basically triangular in shape with some predominantly straight or slightly convex edges. In some cases, these convex edges give the points a distinctly ovoid shape rather than a sharply triangular one. Basal edges are similarly straight to slightly convex. The points are notched with small but well-defined side-notches that are "u" to "v" shaped and placed just above the juncture of the sides with the base . . . . In size, the points average 59 m. in length (with a range from 110 to 27 mm.). All of them made of chert with an apparent preference for gray-banded chert."

Charred wood and charcoal, from the Oconto site, were submitted for radiocarbon analysis and they yielded the dates 5,600 + or - 600 B.P. (C-836) and 7,510 + or - 600 B.P. (C-837 and C-839). Ritzenthaler (personal communication)

believes the former date is probably the more accurate. Projectile points of the Oconto type have been recovered from the surface and from excavations in the reservoir area (Fig. 3, No.'s 5, and 11; Fig. 4, No.'s 15, and 16; Fig. 7, No. 2; Fig. 8, No. 10; Fig. 10, No.'s 11, 12, 13 and 14; Fig. 13 No.'s 21, 22, and 23; and Fig. 17, No.'s 21, 22, and 23).

Projectile points similar to the Oconto type have been recovered from the Reigh Site, on the south shore of Lake Butte de Morts (Baerreis, **et. al.,** 1954; Ritzenthaler, 1957). The Reigh site yielded 68 individuals, 105 copper artifacts, and numerous stone, bone, and shell artifacts. Organic carbon of the bone specimens submitted, yielded a radiocarbon date of 3,600 + or - 250 B.P. (M-644). One source of copper, Isle Royal National Park, has been visited and tested for the last forty years. Drier (1961) has excavated copper mining pits

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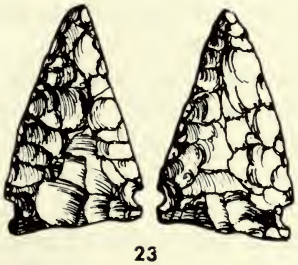


23

KEY TO FIG. 17. Drawings of lithic artifacts in Figure 13; (Artifacts approx. two-thirds natural size).

21. Oconto projectile point, chert.
22. Oconto projectile point, chert.
23. Oconto projecile point, chert.

on the island and has been able to recover charred wood samples that have yielded the following dates: 3,000 + or - 350 B.P. (M-320) from six feet below the surface, in Pit 25; and 3,000 + or - 500 B.P. (M-371e), 3,310 + or - 200 B.P. (W-291) from a charred log recovered eleven to twelve feet below the surface. Current research at the Riverside Cemetery Site in Menominee, Michigan, has uncovered lithic and copper artifacts that would appear to mark a transition from the Late Old Copper (circa 3,000 B.P.) to the middle of the Red Ocher Culture of the same time period (Ritzenthaler and Quimby, 1962). Although a large number of projectile points of the Oconto and Osceola varieties have been found on the surface and in subsurface testing operations in the Kickapoo Reservoir area (pp. 118-119), only one copper artifact, a socketed copper projectile point of Wittry's type I-AI (1951, pp. 7, 11, and 16) has been recovered (Fig. 4, No. 4).

Other regional manifestations of Archaic side notched projectile points are the Raddatz Side-notched and the Madison Side-Notched varieties. Raddatz Side-Notched projectile points have been recovered from the Raddatz (Sk-5), Durst (Sk-2), and Gov. Dodge State Park (Ia-1) rockshelters. Raddatz points have been defined by Wittry as:

> ". . . lanceolate with a tendency for the sides to be parallel, slightly convex, or slightly tapering toward the tip; converging rather abruptly to the tip. The form was achieved by percussion flaking with pressure flaking beused primarily to even the edges of the blade. The notches are set close to the base, perpendicular to the long axis and tend to be U-shaped, although a few are more squared. They are usually as deep as they are wide . . ." (1959a, p. 46).

Raddatz points make their appearance at circa 5,000 B.P. and continue until circa 3,000 B.P. (Wittry, 1959a, p. 63; 1959b, pp. 251-252). Although there are some basic similarities between these specimens and the Osceola points, it is believed by Mason and Mason (1961, pp. 148-155) and by the writer, (who has examined all the specimens of both types), that the Raddatz points are a valid type and should not be considered varieties of Osceola points. Specimens have been recovered from the Osceola site that are Raddatz and Oconto types (specifically specimens: 75, 133, 136, 177, and 182-Mil-

waukee Museum collection), while Wittry's specimen F11-12-1 (1959a, Fig. 3-X, p. 45, and p. 60) is an Osceola point. As Wittry (**Ibid.**, p. 46) has suggested, there are several varieties within the Raddatz type and it would appear that both the Osceola and Madison Side-Notched points have been included in his samples.

Madison Side-Notched points (Baerreis, 1963, pp. 152-154; Nero, pp. 130-131) have the following characteristics:

> ". . . the stem is produced by a U-shaped notch inserted at a right angle to the long axis of the point. The notch is placed quite close to the basal area so that the stem length is relatively short. The body outline is convex or more rarely near straight and the body frequently bears very fine serrations. The stem tends to be as wide or slightly wider than the body though in a few points there is a decrease in width at this point. The basal area is straight with a slight tendency to be either concave or convex. The points are finished by precise pressure flaking and the materials consist primarily of a dark grey chert . . ." (Baerreis, p. 154).

Baerreis believes that the Madison Side-Notched points antedate the Osceola points and would place the Madison points in the Early Archaic Period (**Ibid.**, p. 163). Excavations at Oconto indicate that the Oconto points are possibly earlier than the Madison points. The latter probably range from Middle Archaic to Late Archaic and are contemporaneous with the Raddatz points. Numerous specimens of both varieties have been recovered in the reservoir area, as well as side-notched points that do not readily fit into known types (See Figs. 3, 4, 6, 7, 8, and 10).

Projectile points that are part of the assemblages of the Late Archaic and Early Woodland stages have been recovered from the reservoir area. These points are the stemmed varieties, i.e., straight, contracting, and slightly expanding stem points. The latter group is represented by numerous Durst Stemmed points (Fig. 3, No. 16; Fig. 4, No.'s 8, 9, and 10; Fig. 6, No.'s 1, 3, 5, and 6; Fig. 7, No.'s 3, 7. and 10; and Fig. 8, No.'s 3, 16, 17, 18, and 19). Durst Stemmed points are ". . . interpreted as marking the beginning of the Late Archaic times . . . (Wittry, 1959a, p. 61) . . . later in time than the side notched points . . . (Wittry, 1959b, p. 252) . . . and per-

haps surviving into later times in subdued importance" (**Ibid.**, p. 219). Durst Stemmed points are defined by Wittry as being produced:

> ". . . by the removal of long shallow notches from the corners of a leaf-shaped blank. The shoulders are rounded and generally represent a transitional zone of curvature from the stem to the convex-sided blade. The stem expands slightly to a gently rounded or straight base, the latter being far less frequently the case than the former" (1959a, p. 48).

Some Durst Stemmed points bear basal grinding and the base is a consistant 2 mm. wider than the stem. Durst Stemmed points represent a regional variety of stemmed points that have a slightly expanded stem. Orient Fishtail Points (Ritchie, 1961, p. 39) are larger than the Durst Stemmed points. Specimens similar to Orient points (Fig. 4, No.'s 6, and 19; Fig. 8, No. 24; Fig. 13, No. 20, and Fig. 16, No. 20) have been recovered in the reservoir area and their presence adds credence to the belief that Durst and Orient points are representative of the transitional period between Archaic and Early Woodland (Boyd, 1962, pp. 473-478).

Artifacts representative of the Red Ocher Culture are absent in the reservoir area. Characteristic ground and polished stone artifacts, of the Archaic period, are represented by only three specimens (Fig. 11, No.'s 4, 5, and 6). The antiquity of side notched points has been pointed out, and thus, we are primarily dependent on the side notched and stemmed projectile points to represent the Archaic stage in the Upper Kickapoo Valley. Although one copper point has been found, the lithic points of the Old Copper assemblages are amply present in the reservoir area. The Old Copper Culture has been reshaped and slightly redefined since McKern first proposed it in 1942. To date we have information from four cemetery excavations and the Isle Royale mines. The chronological placement and relationships to other cultures remain the major problems of Old Copper. Habitation sites may yield the answers that are needed. It is believed that the large quantity of Old Copper Lithic points found in the reservoir area will give us the needed information as soon as the sites are excavated and analyzed. The Old Copper Culture did not suddenly arise in the year 5,000 B.P. There are ante-

cedents to this culture, and they may be found in the Kickapoo Reservoir area. The Old Copper culture remains the earliest metal using culture in the New World (Hurley and Yoshizaki, n.d.). It is the result of independent invention with little or no evidence to support connections with early users of copper in Siberia (Wormington, 1962, p. 24). Therefore, we must gather any and all information that will shed more light on this culture, its lithic assemblage, and contemporaneous traditions that possibly interacted with it.

EARLY WOODLAND

Southwestern Wisconsin is considered a marginal area for prehistoric horticulture and agriculture (Kroeber, 1963, p. 89). Its long hard winters and short growing seasons have been overcome with the introduction of hybrid corn and climatically hardened European crops. Horticulture aided in the transformation from an Archaic to an Early Woodland stage. The Early Woodland stage is considered a transitional one in which certain new traits diffused throughout the Eastern United States. There was a shift from collecting wild plant and animal foods to limited horticultural practices (Jennings and Norbeck, 1964, p. 237). Before these traits are discussed, we must consider the meaning of Stage and Period. Throughout this paper I have been using initial and terminal dates for the periods presented. A period framework assumes a fairly sound chonological basis. Stage is one of the steps into which the material development of man is divided. A stage is used as a basis for comparison and does not necessarily imply a beginning or an end. Thus, the Archaic stage in certain areas, can survive while other stages develop. This can result from cultural lag, temporal marginality, or true marginality. Therefore, periods and stages are not unilinear developments of well ordered progressions but, rather, multilineal developments that have a considerable degree of temporal and spatial overlap (Mayer-Oakes, 1956, p. 580).

We have suggested a terminal date of 3,000 B.P. for Archaic but this does not mean that peoples with an Archaic mode of life could not have survived well into Woodland periods or that incipient Woodland did not have its beginnings in the Archaic period. The Early Woodland period probably

began as early as 4,500 B.P. and terminated about 2,500 B.P. (Fowler, 1959b, p. 17). It must also be kept in mind that the Early Woodland stage may have lasted longer than the terminal date proposed for the period.

Early Woodland can be viewed as a developmental stage of semi-sedentary groups who continued to hunt, gather, and fish. In a cultural sense, Early Woodland is reserved for Woodland groups that exhibit many new non-Archaic characteristics. They do not appear to have an elaborate ceramic complex, socio-religious organizations, and are not agriculturally dependent. Early Woodland antedates the Middle Woodland and/or Hopewell stage.

The characteristic traits of Early Woodland are: utilization of pottery; stemmed and side-notched points that bear resemblances to those found in the earlier Archaic period; red ocher burials; polished stone artifacts such as celts; horticulture; communal cooperation in mound building; gorgets, continued utilization of copper; and possible house and ceremonial structures.

We are again dependent upon the lithic remains from the reservoir area to represent this stage of development. Three polished stone artifacts have been recovered (Fig. 11) but their association is not known. Diagnostic points of the Red Ocher Culture are lacking. Burials, gorgets, copper, and house structures are totally absent, thus far, for this period. The small amount of pottery recovered is non-diagnostic and lacks the incised-over-cord marking and cord roughened interiors associated with the Early Woodland period. One mound has been located within the proposed reservoir area, and must await excavation for its proper time placement. Therefore, reference to the projctile points will indicate the presence of Early Woodland peoples in the Upper Kickapoo Valley and will serve as a guide in the future work undertaken.

Durst Stemmed points extend into the Woodland stage and have been found at Frye Site I, Ve-41 (Fig. 2, Map 2; Fig. 7, No.'s 3, and 7) associated, in the upper two levels, with grit tempered pottery. At 1.0 to 2.0 below the surface there are Durst Stemmed points stratigraphically above Oconto Side-notched points. Both lack ceramic associations.

At Kaukl Site VIII (p. 39) two Durst Stemmed points (Fig. 6, No.'s 5, and 6) have been found in subsurface testing, and they again lack ceramic associations. Thus, we have possible Late Archaic and Early Woodland levels associated with Durst Stemmed points.

Adena projectile points have been recovered from the surface of archaeological sites in the reservoir area (Fig. 3, No.'s 19 and 29; Fig. 4, No. 21: and Fig. 10, No. 18). These points are described by Bell (1958, p. 4) as:

> ". . . rather large in size with most examples ranging between 3 and 5 inches in length. The stem is broad, typically rounded and approximately semi-oval in outline. The shoulders are prominent but not barbed, and the blades form a gentle convex curve extending toward the tip. The Adena points are usually fairly thin, in spite of their width, and exhibit good workmanship in the chipping. In some cases the rounded stem has been ground or smoothed to dull the edges."

Adena points have an estimated age ranging from about 2,800 B.P. up to 1,200 B.P. (**Ibid.,** p. 4; and Ritchie, 1961, p. 12). Thicker, contracting stem points, with pointed to slightly rounded bases, are classified as Gary points. Regional varieties of this point type are known as Waubesa Contracting Stem points (Baerreis, 1953, p. 155). Gary or Waubesa points (Fig. 3, No.'s 21, and 22; Fig. 6, No. 4; and Fig. 10, No. 19), described as contracting stem points in this report, are described by Bell (1958, p. 28) as:

> ". . . triangular blade with edges usually straight to convex but sometimes concave or recurved. Shoulders may be small but usually flare out widely almost at right angles; barbs, if present at all, are short. Stems usually contract strongly to pointed or somewhat rounded base but may at times approach being parallel sided."

As Bell mentions (**Ibid.,** p. 28), Gary points have a wide distribution throughout the eastern United States and range in time from perhaps 2,000 B. C. up to 1,600 A. D. Small lanceolate points (Fig. 13 and 16, No.'s 13, 14, and 15) may also survive into Early Woodland times.

MIDDLE WOODLAND

The Middle Woodland period of Circa 2,500 to 1,500 B. P. is distinguished by a wealth of ceremonial material, stone

pipes, copper and stone celts, bone tools, burial mounds, houses, and highly diversified ceramics. Middle Woodland projectile points are of the stemmed and corner notched varieties. They average two to three inches in length. Survey and subsurface testing operations have thus far failed to turn up diagnostic pottery of this period and we are left wholly dependent upon projectile points as the representatives of a Middle Woodland utilization of the Upper Kickapoo Valley.

One diagnostic point type, Snyders, is associated with the Hopewell Culture of the Middle Woodland period. Two Snyders projectile points (Fig. 3, No. 11; and Fig. 7, No. 8) have been recovered from the surface of archaeological sites within the reservoir area. Snyders projectile points are described by Bell (1958, p. 88, as:

> ". . . a large sized, broad, carefully made corner-notched dart point. In outline the Snyders point is a broad ovate blade having broad corner notches cut in from the corner to provide an expanding stem. The blade is triangular with convex edges terminating in bold barbs. The stem is relatively short and expands toward the base which is normally convex. The notches are wide and deeply cut, usually well rounded and carefully executed. The point is relatively broad but thin in cross-section, and it normally exhibits better than average workmanship."

Other corner notched points (Fig.'s 3, 4, 6, 7, 8, and 10) are probably associated with the Middle Woodland and the following Late Woodland periods. The extent of Middle Woodland utilization of the Upper Kickapoo Valley appears to be minimal but the full extent of occupancy will not be known until excavations have been completed.

LATE WOODLAND AND MISSISSIPPIAN

The Late Woodland period of circa 500 A. D. and the Mississippian period of circa 900 A. D. to 1600 A. D. are poorly represented in the reservoir area. Mounds that are associated with the Late Woodland, Effigy Mound Culture have not been located. Linear, conical, and oval mounds are present but almost all are outside the reservoir area.

One oval mound, Schroeder Site II, Ve-30, has been located within the reservoir and awaits excavation. Possible house

structures and one grit tempered body sherd have been uncovered at Kaukl Site I, Ve-31. The following sites have all yielded small amounts of pottery and projectile points that may belong to the Late Woodland period: Risen Sites I and II, Hopkins Stie II: Allikas Site I; Erwin Site II; and Gillen Site IV, VII, and XI. Unfortunately the ceramic samples are few in number and not diagnostic enough to place them with certainty in the Late Woodland period.

A few small triangular and small side notched points (Fig. 4, No. 12) have been recovered, but, the associated ceramics of the Mississippian stage are absent. Utilization and occupation in the reservoir area, after circa 500 A. D., appears to be minimal. Therefore, it is tentatively suggested that the earlier artifactual remains represent a definite pattern of ecological exploitation of an area marginal to more agriculturally productive lands. This agricultural marginality is reflected in the lack of traits considered diagnostic of the agriculturally based Late Woodland and Mississippian cultures, and the later historic Indians.

BURINS IN THE UPPER KICKAPOO VALLEY

In November, 1962, during analysis of lithic material from the Silver Creek Sites, Monroe County, Wisconsin (Hurley, n. d.-b), it was noted that one projectile point was reworked and evidenced two blows that were interpreted as burin-blows. Further examination of the material resulted in the discovery that two other projectile points had burin-blows. The Silver Creek Sites are less than 20 miles north of the Reservoir area (Fig. 20, No. 2). The proximity of these sites prompted the decision to examine lithic artifacts from the reservoir area to ascertain if any had burin-blows. During the 1963 field season, this examination yielded 34 specimens that will be described and discussed shortly. Before this discussion is undertaken, it is necessary to discuss what constitutes a burin and the implications that can be drawn from them. Bandi (1963, p. 20) describes a burin as follows:

> ". . . the burin is a stone implement with a chisel-shaped cutting edge . . . **which always runs in a right angle to the plane of the implement.** This cutting edge is formed by the meeting of two rather narrow facets. At least one of these facets must be formed by one or several 'burin-

blows.' If the other facet is not made in the same way, it may be formed by retouches, fracture or be unworked."

Giddings (1956, p. 229) describes the burin-blow as being:

". . . unlike the strike or press that dislodges a microblade from its core, does not usually allow the spall to split in a curve from the full length of the parent piece. Instead, it causes the spall to break loose in a hinge fracture while it is still straight, leaving a ragged scar at the distal end of the burin. A burin that has several spalls removed by burin blows displays sawlike teeth approximately parallel to the last scar. . . ."

These spalls, or removed flakes, are the result of two types of percussion. 1) Direct percussion; in which the object receives the blow; 2) Indirect percussion; in which a punch receives the blow. The direct technique normally leaves a prominent bulb of percussion, unless the parent piece had a thick cortex which would serve as a cushion to the blow, while indirect percussion normally leaves a diffused bulb. The spall removed with a burin-blow normally is oblong with a diffused or prominent bulb and can be the result of both techniques (Epstein, 1963, p. 33). These burin spalls are generally straight to slightly curved oblong flakes. The first spall removed is generally triangular in cross section, with succeeding spalls being normally a flat-rectangular in cross section. Regular flaking removes flakes that are broad and thin, whereas, burin spalls are narrow and thick.

Facets on waste flakes, worked flakes, and implements can appear to have burin-blow characteristics. Identification of burins is, therefore, made exceedingly difficult when artifacts exhibit fractures that look as if they received this blow. Giddings further clarifies his description by a discussion of the results of a burin-blow:

". . . the one feature of a burin that identifies the object beyond doubt is, of course, the presence of a 'negative bulb' at the point where the burin blow is delivered. This is an essential effect of the technique and provides a scoop-shaped cutting edge that shaves razorlike at the bottom and edges of a groove when a burin is drawn edge-wise toward the user" (1956. p. 229).

Epstein (1963a) has devoted considerable time to making burins and comparing them to excavated specimens. His research has resulted in additional information regarding burin

identification. "When a burin spall is removed from the parent piece, the burin spall scar, is usually quite flat, although occasionally it is slightly concave. . . ." (**Ibid.,** p. 31). A flat spall scar is not usually found on tools or on projectile points that have been accidentally broken. Normally the break area has a rolled or curved edge parallel with the scar. Epstein observed, during his experimentations, that the presence or absence of the hinge scar depended on the intensity of the blow, i. e., a sharp hammerstone blow may leave no hinge fracture at all. This blow may be of a force to "flatten the whole spall facet" and obliterate the negative bulb (**Ibid.,** p. 33). Therefore, the bulb remnants (the waves or rings on the conchoidal fracture) must be ascertained on the bulbar scar in order that blow direction may be known.

Once a burin has been manufactured; its uses contribute to the importance of this implement. L. S. B. Leakey (1960) states that with such a tool:

> ". . . wood can be cut across the grain, and that bone and antler can also be cut. This is very important — for it was only when the burin became a **common** tool of the Stone Age cultures that we find bone and antler and even ivory being utilized on a big scale to make awls, harpoons, arrow-points, etc. In other words, it was the invention of the burin that made it possible for prehistoric man to extend the range of materials over which he had mastery and which he could turn into weapons" (p. 62).

The burin, therefore, is a tool to make tools. It is a chisel and has a cutting edge, or edges, like a chisel. It was used to slot bone and wood for handles or hafts of other tools, and was one of the earliest tools used for engraving bone or wood. As with any tool used to work wood or bone, it should evidence wear, abrasion, or exhibit minute hinge fractures. Epstein (1963a, p. 33) attempted to determine how much wear a burin would show after ten minutes use on pine. A groove one-half inch deep resulted in shatter flakes similar to those found on the facet after percussion spall removal. Little wear was demonstrable when the burin was used on soft wood. Epstein concludes ". . . all this testifies to the strength of the burin when used for engraving, and also argues for caution in interpreting the presence or absence of use scars on these same tools" (**Ibid.,** p. 33).

A great variety of burin types are recognized and described by Old World prehistorians. Their descriptions and typologies are based on the assemblages of the blade industries of the Upper Paleolithic. Some of the burin traits associated with these blade industries are: true prismatic blades, polyhedral cores with faceted platforms, core tablets, and burins that are primarily made on blades and flakes. A survey of the recent New World literature, i. e., Anthropological Papers of the University of Alaska, Vol. 10, No. 2; Arctic Institute of North America, Technical Paper No. 11; and American Antiquity, 1963-64; makes us cognizant of the information concerning burins, prismatic blades, core tablets, burin spalls, and techniques that are reminiscent of Old World blade industries. The presence of burins and the lack of spalls, tight chronological placement, associated artifacts, etc., necessitates that the Kickapoo Valley specimens be placed in descriptive categories without ascribing typological differences as proposed by Bandi, Epstein, Miller, and Giddings.

Sorting of the Kickapoo specimens resulted in many false starts. It is only through the patience and constructive advice of Mazakazu Yoshizaki and William Irving that this outline of burin identification is attempted. Yoshizaki has suggested two categories for New World burins; 1) **Primary Burins**; burins made on blades and flakes that are intended to be used only as burins, and, therefore, technologically closest to the Old World specimens. 2) **Secondary Burins**; burins made on tools whose original functions were later negated by burin utilization. The latter specimens exhibit burin attributes at the proximal or distal ends of complete or fragmented implements. Further classification, under these two categories, is accomplished by considering the constituent attributes of burins and the subsequent combination of these attributes.

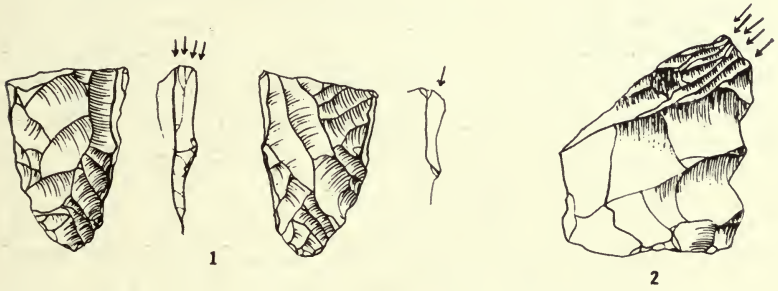
A clustering of these attributes will indicate patterns that are part of the technological processes in burin manufacture. Conversely, less significant clustering will mitigate against the artifact being a burin. The attributes are as follows:

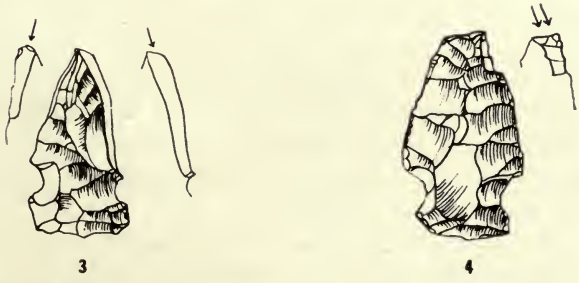
1. Primary burin
2. Secondary burin
3. Location of burin facet

4. Number of facets
5. Facets at right angle to the main flake surface
6. Direction of fracture wave
7. Presence or absence of negative bulb of percussion – the second burin blow usually removes the first negative bulb
8. Number of hinge fractures
9. Abrading, wear, or use fractures.

The following descriptive categories are presented with the intention that the category "A" specimen be utilized as the "ideal" burin from the Kickapoo sample, and which will serve as a model from which comparisons can be made.

1. Secondary Burins





KEY TO FIG. 18. Burins from the Kickapoo reservoir area; (Artifacts are natural size).

1. **Secondard burin, chert, category "A."**
2. **Secondary burin, Prairie du Chien Dolomite, category "B."**
3. **Secondary burin, category "C."**
4. **Secondary burin, category "D."**

A. Number of specimens: 1 (Fig. 3, No. 6; Fig. 18, No. 1). Distal end fragment of a knife or projectile point. Material: white mottled chert. Five burin facets located on lateral blade edges. Right obverse edge has four burin facets with three negative bulbs present and two hinge scars. Left reverse edge has one burin facet, a negative bulb, and a hinge scar. Facets are at right angles to the main flake surface. Direction of the blow is towards the tip. Wear and use fractures are found on the burin facets.

B. Number of specimens: 1 (Fig. 6, No. 11; Fig. 18, No. 2). Proximal fragment of bifacial implement. Material: Prairie du Chien dolomite. Five burin facets located on the obverse face. Two negative bulbs and one hinge scar are present. Direction of the blows is towards the left observe edge. Wear is present at the distal end of the burin facets.

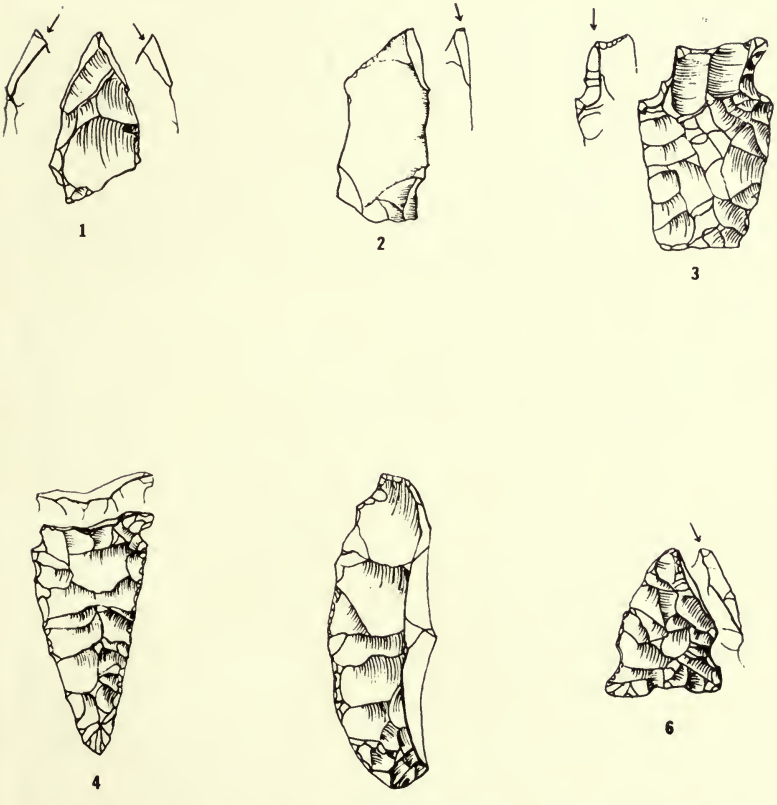
C. Number of specimens: 1 (Fig. 10, No. 3; Fig. 18, No. 3). Side-notched projectile point. Material: cream chert. Two burin facets located on lateral blade edges. Right obverse facet has a slight negative bulb and use fractures are present at the distal end of the facet. Left obverse facet has a prominent negative bulbar scar and has wear and use fractures along the facet. Direction of the blows is towards the basal end. Both hinge scars are present.

D. Number of specimens: 2 (Fig. 8, No. 2; Fig. 18, No. 4). Expanding stem projectile points. Materials are: mottled red chert and cream chert. Two burin facets are located on each specimen on the right obverse edge. Hinge fractures are stepped and negative bulbs are present. One specimen exhibits use fractures above the negative bulb. Facets are at right angles to the main flake surface and the direction of the blows is towards the basal end.

E. Number of specimens: 3 (Fig. 6, No. 27; and Fig. 19, No. 3). Side-notched projectile points and an end scraper. Materials are: mottled grey to tan chert. Specimens exhibit one to two burin-blows

from the proximal end. One to two hinge scars are present, and one specimen has a promient negative bulb. Wear and use fractures are not present. Facets are at right angles to the main flake surface.

F. Number of specimens: 1 (Fig. 19, No. 4).
Side-notched projectile point. Material: mottled pin-grey chert. Direction of the blow is from the left obverse edge and has removed the base. Wear, use fractures, negative bulb, and hinge scars are absent.



KEY TO FIG. 19. Burins from the Kickapoo reservoir area; (Artifacts are approximately two-thirds natural size).

1. **Primary burin, chert, category "J."**
2. **Primary burin, chert category "K."**
3. **Secondary burin, chert, category "E."**
4. **Side-notched point with a burin-like facet, chert, category "F."**

5. Implement fragment with a burin-like facet, chert, category "G."

6. Side-notched point with possible burin facet, chert, category "H."

G. Number of specimens: 3 (Fig. 19, No. 5). Knives. Material: Pink to mottled cream chert. One facet present on the right lateral edge. Direction of the blow is from the distal end to the proximal end. Hinge scars, use fractures, wear, and negative bulbs are absent on these specimens. The facets are at right angles to the main flake surface.

H. Number of specimens: 13 (Fig. 6, No. 23; Fig. 19, No. 6; Fig. 7, No.'s 6, 11, and 12. Stemmed, side-notched, and corner notched projectile points. Material: mottled pink, grey, cream, and tan chert. All specimens have one facet at right angles to the main flake surface with pronounced to absent hinge scars. Negative bulbs, use fracture, and abrasion are absent. Direction of the blow is from the distal to proximal end.

I. Number of specimens: 6 (Not illustrated). Distal end fragments of knives and projectile points. Material is mottled pink, grey, cream, and white chert. Specimens have one to two facets on the lateral blade edges that are at right angles to the main flake surface. Hinge scars are pronounced to absent. Negative bulbs are diffused and there is no evidence of use fractures, abrasion, or wear. Direction of the blow is towards the tip of the specimens.

2. Primary Burins

J. Number of specimens: 1 (Fig. 6, No. 31; Fig. 19, No. 1). Mottled pink chert flake. Two facets on the lateral edges of the obverse face. Right facet has a slight hinge scar, negative bulb, and use fractures at the distal end. The left facet has a more pronounced hinge scar, negative bulb, abrasion, and use facets. The facets are at right angles to the main flake surface and the direction of the blow is towards the base.

K. Number of specimens: 2) Fig. 6, No. 8; Fig. 19, No.

2). Mottled cream chert flakes. One facet is apparent on the right lateral edge of the obverse face. Facets have slight to pronounced hinge scars and the facets are at right angles to the main flake surface. The direction of the blow is towards the base. Negative bulbs are diffused and one specimen exhibits use fractures at the distal end of the facet.

Presence or absence of these attributes can be used as criteria when the nature and implications of these attributes are considered. Thus, if burin facets are found on an implement where the broken edge was used as a platform for spall removal towards the distal end or tip, then accidental breakage, haft fracture, or impact fracture can be ruled out. Conversely, one facet at the distal end of a projectile point should be viewed with suspicion. Impact fracture or accidental breakage may cause the facet and factors such as flake-back, or impact scars, will indicate if this has occurred. It should be kept in mind that normal breakage can occur at right angles to the blade surface, but, the facet is usually rolled or has a curved edge and is not normally flat. Removal of two or more spalls with stepped hinge scars, negative bulbs or percussion, and abrasion or minute use fractures are considered excellent criterion for the likelihood of the speciman being a burin.

The above criterion rule in favor of the specimen from category "A" being considered a burin, i. e., there are five spalls removed from the mid-section towards the distal end of the blade, hinge scars, negative bulbs of percussion, wear, and use fractures. The specimen in category "B" has received five burin-blows but they are not at right angles to the main flake surface and, therefore, this specimen is considered a flat burin. The two facets removed from the specimens in categories "C" and "D," when coupled with negative bulbs, hinge scars, use fractures, and facets at right angles to the main flake surface, are significant enough to suggest that these specimens are good examples of Secondary burins. Categories "E, F, G and H" are included here as illustrative of artifacts that exhibit some of the characteristics of burins, i. e., flat facets at right angles to the main flake surface and hinge scars, but, absence of most of the significant attributes

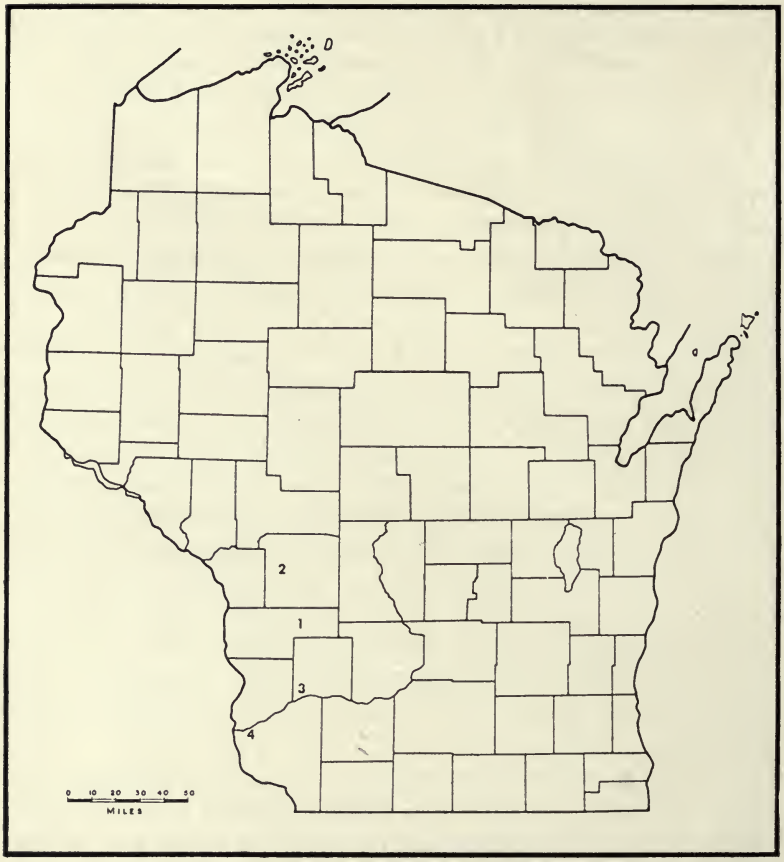


FIG. 20. Distribution Map of Burins found in Wisconsin.

necessitates that these examples be excluded from the burin group.

The factors that excluded the above specimens also apply to the projectile point in category "F." Accidental breakage or haft fracture probably removed the spall from the base, but, it should be noted that Epstein (1963b) has projectile points with such facets and they are considered to have the attributes necessary for a burin. The six specimens in category "I" have facets located where they cannot be considered the results of impact fracture, hafting, or breakage. The absence of use fractures, abrasion, and wear are factors against their being considered "good" burins, but upon comparison with

the rest of the sample, they are provisionally placed in the Secondary burin group. The three Primary burins, "J" and "K," are representative of burins that have several attributes that weigh in their favor. Therefore, they and the specimens from categories "A, B, C. and D" are considered examples of New World Primary and Secondary burins.

It is hoped that current burin publications and this report will prompt and aid investigations in the examination of their lithic artifacts. Further burin identification will contribute towards our knowledge of their distribution, cultural associations, and chronological placement.

It has been suggested by Epstein (1963a and b), and Miller (1962) that burins are part of the Paleo-Indian and Archaic lithic assemblages. None of the Kickapoo specimens can be placed in either of these two assemblages with any assurance. Specimens from the Silver Creek Sites, Price Sites (Fig. 20, No. 3), and the Jones Site (Fig. 20, No. 4) appear to belong to the Early Woodland and Middle Woodland lithic assemblages.

SUMMARY AND RECOMMENDATIONS

Archaeological reconnaisance in the projected Kickapoo Reservoir area has led to the discovery of 158 prehistoric sites. One hundred and twenty-one are completely or partially within the maximum pool of the reservoir, projected conservation recreation areas, and areas that will be directly affected by state and county highway relocation. Approximately one-third, or 45, of the sites have undergone subsurface testing; of which twenty-six are recommended for extensive excavation.

Survey and testing activities in the Kickapoo Reservoir area made it possible to construct a tentative chronology concerning the occupations and utilizations of a valley that was ice free during late Pleistocene times. The chronology will unquestionably be refined when the excavations are completed, but, it is believed that a presentation of the available data would typify the chronological sequences and cultural traditions, and be of a nature to positively direct future archeological work.

Evidence of early Paleo-Indian occupations within the con-

fines of the reservoir basin is based upon surface finds. Early forms of projectile points have been recovered in Wisconsin (Fig. 12), that post-date the Cary substage of the late Wisconsin glacial stage and predate the Valders substage. This regional Paleo-Indian manifestation is believed to be within the temporal limits of 11,000 B. P. to 5,000 B. P. The early nomadic hunters penetrated the Driftless Area and adapted to an ecological zone that apparently enabled a population density of band size to maintain itself and continue an exploitation of the existing flora and fauna. The fluted Clovis projectile points recovered are technologically similar to those found throughout the eastern United States, but, they appear to fall into a metric pattern similar to those recovered in Michigan (Mason, 1958, Table II).

Continued evidence of occupancy and utilization is indicated by the recovery of Midland (Wormington, 1957), Plainview (Sellards, **et al.,** 1947; Davis, 1963), Agate Basin (Roberts, 1943), and lanceolate projectile point varieties. These points lend credence to the belief that the reservoir area witnessed the continued expansion and adaption of Early Man in Wisconsin. A fluorescence in the material culture of these hunters and gatherers is represented by the presence of side-notched projectile point forms that mark a greater diversity in chipped stone. This period, the Archaic, of circa 5,000 B.P. to 3,000 B.P. is charactrized by early copper implements; Oconto, Raddatz, Madison, and Osceola side notched points. The coeval stemmed points appear to begin at the terminal maxima of this period and herald the beginnings of the Early Woodland stage.

Diagnostic pottery of the Woodland periods is lacking in the reservoir area. Contracting stemmed points (Durst, Adena, and Gary) are the hallmarks of the Early Woodland period and are later replaced by expanding stemmed, corner-notched (Snyders), and small side-notched points. An apparent decline in artificial material, campsites, village sites, and lack of mounds, reflect a void that is continued and amply evidenced during during the Late prehistoric and Historic periods when areas more conducive to agricultural settlement were preferred.

The presence of burins in the reservoir area indicates the

importance and archaeological value of these sites. The necessity of complete excavation cannot be underestimated. The resultant site sample size may be limited, but, when coupled with the yields from other excavated sites, the assemblages, development, trends, adaption, and change of cultures of the prehistoric Indians of Wisconsin, will be of a nature that will be a significant contribution to the interpretation of the archaeology of the Eastern United States.

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and

Guest Reviewers

THE BOOKSHELF

Social Organization of the Central Algonkian Indians. by Charles Callender. Publications in Anthropology, Milwaukee Public Museum, VII, 1962. 140 pp., maps, illustrations, appendices, bibliography. $4.00.

The term Algonkian is both highly familiar and highly equivocal. As a linguistic grouping, for which Callender wisely prefers to reserve the spelling Algonquian, it includes societies extending from the East Coast all the way to California. In cultural terms, it is often applied to groups sharing a common language stock but aboriginally, at least, restricted to the area east of the Mississippi River and characterized by Woodland Culture in an ethnographic sense. On occasion, the cultural designation has been subdivided into Northern, Central and Eastern types. The Eastern or coastal type includes tribes in Virginia, North Carolina and Maryland who exhibited strong cultural influences from neighboring Muskhogeans in regard to elaboration of social organization and economic complexity; while the Algonquian speakers on the seaboard from New Jersey up through New England whose dependence on agriculture and concomitant cultural complexity at the time of contact related them as progressively thinned out continuations of Algonkian culture found fur-

ther south. The Northern and Central types have been designated on the grounds of greater cultural complexity typifying the latter. There is little question that such groups as the Naskapi, Montagnais, Swampy Cree, Canadian Saulteaux and others of the nortern forests and subarctic region had a simple hunting and gathering economy later elaborated as a result of contact in the fur trade. However, while many problems remain in the classification of the Algonkians, an important beginning in solving the problem of Central Algonkians has been made by Charles Callender.

Rather than relying on the usual designation of a dividing line following the spread of maize culture, Callender sees ecological factors encouraging or hindering gardening as contributory to distinctive types of social organization. He reserves the term Central Algonkian for Algonquian speaking groups who share a cluster of key components: a lineage structured kinship system with Omaha terminology, a complex system of clans regulating personal names, and a dual division in which a society is composed of two distinct but mutually interdependent parts for purposes of games, burials, social control and the like. On this basis he is able to relegate the heretofore questionable Ojibwa and Ottawa to a Northern Algonkian classification although he sees them as transitional, albeit more Northern than Central, and sometimes refers to them as North-Central. Callender includes within his Central grouping the Sauk, Fox, Kickapoo, Prairie Potawatomi, Shawnee, Miami, Illinois, and Menomoni. He notes the possible inclusion of the Delaware but does not mention other possible candidates such as Wea and Piankashaw presumably because data are too sparse for purposes of analysis. All but the Menomini provide special problems in his ecological analysis because they were removed to a prairie location prior to the time ethnographic data were collected. He notes that the Potawatomi present particular difficulties but does not explore them in ethnohistorical depth. Callender feels that the Forest County Potawatomi of Wisconsin have diverged toward Ojibwa-Ottawa characteristics in relatively recent times through intermarriage and residential proximity to these Northern type neighbors. In all probability, not only the Forest County band but other Potawatomi groups in both

Upper and Lower Michigan and Canada were one tribe originally along with the Prairie Potawatomi group who received their name when they were removed to Kansas. Their present differences are the result of divisive treaties and religious factionalism in the nineteenth century.

However, despite Callender's reliance on almost exclusively Prairie Potawatomi data for that tribe, the bulk of his documentation for the designation Central Algonkian is impressive and valuable. In addition to his own field work among the Sauk, Fox, and Prairie Potawatomi, Callender has relied on both published and unpublished data of many other anthropologists. He performs a signal service in making much heretofore unpublished material available to scholars.

Chapters I and II review the historical background of the Central Algonkians in general cultural terms and discuss the nature of Central Algonkian Social Organizations as of about 1800. The third chapter reconstructs the probable evolution of Central Algankian social organization. Here Callender relies heavily on linguistic reconstructions by Charles Hockett and relates changes in terminology and structure to ecological considerations showing development of lineage structure and patrilineality as a response to the occurrence of larger social enclaves able to subsist together for longer periods than is possible for more northerly people. Chapter IV provides details of kinship systems, clan systems and dual divisions for modern Fox, Sauk and Prairie Potawatomi along with whatever comparable data are available for Shawnee, Kickapoo and Miami. A concluding section sums up reasons for similarities within the groups as being as much due to common responses from a common cultural base to similar ecological opportunities as to diffusion of cultural traits among the groups.

While Callender favors an evolutionary explanation of independent invention over cultural borrowing to account for similarities and makes a convincing case, he perforce neglects some still unanswered questions of possible cutural diffusion from the Southeast, particularly in the prevalence of the dual division. Callender does note that the Siouan speaking Winnebago and the Menomini have a number of organizational details in common which Menomini does not share with other

Central Algonkians. He furthermore notes that despite a certain distinctiveness of the Winnebago, they along with other Chiwere Siouans such as Iowa and Oto have traits in common with Central Algonkians which are not shared by other Siouan groups, particularly the intensity of the joking-respect relationship in the Omaha kinship system. Explorations of these questions, however, are beyond the task Callender set for himself and it is noteworthy that he mentions them even as leads for other scholars to pursue.

In summary, this is a definitely but not discouragingly technical book. It is a most welcome compendium of facts on social organization as well as other aspects of culture presented in a clear, detailed and well organized fashion. The book also provides a number of significant analytical conclusions as to relationships and causation between ecology and social organization worth the reader's serious consideration. In answering certain questions, the book also helps to clarify others as a guide to further research.

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Aboriginal Relationships between Culture and Plant Life in the Upper Great Lakes Region, by Richard Asa Yarnell. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 23, 1964. 218 pages, 1 figure, 4 maps. $2.50.

Archaeologists today are no longer content with prehistoric culture descriptions that focus exclusively upon material culture. It is recognized that an adequate understanding of life in the past can only be gained through an appreciation of the patterns of man's adjustment to his environment. The current prominence of this approach in no way negates the importance of detailed ceramic or lithic analyses. Such studies are and will remain the fundamental tools by which chronologies are built and cultural relations established. As such, they must precede or be carried on concurrently with ecological investigations. However, it is in the latter approach that new dimensions of interpretations unfold.

Richard A. Yarnell's report, essentially a synthesis of what is known regarding plant utilization in the Upper Great Lakes

region, constitutes a basic reference work for archaeological interpretation in this area. Indeed, it is far more than a simple compilation of published sources for unpublished ethnobotanical reports from the files of Volney H. Jones and data on the natural distribution and habits of the plants gathered by Edward G. Bliss incorporated in the study. In addition, Yarnell himself has identified plant remains from a substantial number of sites. He describes his report as concentrating upon the study of the (1) utilization of native plant products as determined from ethnographic records and the results of archaeological research; (2) aboriginal agriculture with respect to its historical aspects and the distribution of length of frostless season; and, (3) the effects of aboriginal activities on the natural flora and vegetation of the Upper Great Lakes region.

Yarnell opens his account with a brief description of the physical characteristics and vegetational cover of the area that drains into Lakes Huron, Michigan, and Superior and a synopsis of the recent climatic sequence and the vegetational and cultural history. In the first major section that follows, native food plants found at archaeological sites are discussed. In an effort to obtain a meaningful sample, the area considered was expanded to include Wisconsin, notheastern Illinois, northern Indiana, Ohio, northwestern Pennsylvania, western New York, and Ontario. It is with some surprise, and presumably a reflection on the adequacy of our local reports, we find Yarnell stating that no sites were found in Indiana and Wisconsin where native food plants were identified. Without attempting to ascertain whether the sites reported for other states are adequately reported, let us consider whether the status of work in Wisconsin is indeed as black as it is painted.

The report by Blake and Cutler on plant materials from the Bell site (Wn 9) does include the identification of the seeds of wild plums (**Prunus americana**) (**Wis. Arch.**, 44:70-1, 1963). The late Professor J. C. Curtis identified for us hickory nuts (**Carya ovata**), an acorn cast (**Quercus velutina?**) and a wild plum seed (**Prunus amer.**) at the Dietz site (Da-12) (**Wis. Arch.**, 37:10, 1956). Recent excavations in the northwest pyramidal mound at Aztalan by Chandler W. Rowe produced hickory nuts in a string bag associated with

a burial (**Wis. Arch.**, 39:107, 1958). While the specific genus and species is not given, W. C. McKern (Milw. Pub. Mus. Bull. 16:138, 1945) reports that hickory nuts, butternuts and hazel nuts were occasionally encountered at Oneota sites. Barrett and Skinner in one of the storage pits at the Kakwatch village site near Keshena, evidently associated with Late Woodland pottery, report the presence of walnuts (Milw. Pub. Mus. Bull. 10:454, 1932) and charred seeds which are unfortunately not further identified. This is still not an impressive list but it it not totally inadequate and a more intensive search of the literature than that undertaken by this reviewer might turn up a sufficient number of additional identifications that could alter somewhat the general interpretations presented.

Similarly, where lists of food plants are compiled from ethnological sources, further search of the literature might well prove rewarding. The Miami, for example, are listed among the tribes for whom very little information of this type is available. Considering the rapid decline in population this group experienced during the historic period, one might not be surprised at this statement. However, substantial information is available in at least two publications of Jacob Platt Dunn (**Indiana and Indianans,** Vol. I, pp. 76-80, 1919; **True Indian Stories,** p. 114, 1908). Mention of the Mascoutin in this section of Yarnell's report (p. 47) is doubtless simply a duplication of the listing for Potawatomi due to Alanson Skinner's unfortunate use of this name.

A notable feature of this same section on aboriginal plant utilization is an arrangement of food plant species in order of availability by season. Its importance, of course, lies in the potentiality for interpretation of the season of the year in which the site was occupied if we can assume these plant foods were not stored for later use. Appendices also tabulate plants as: (1) beverage and flavoring plants; (2) medicinal beverage plants; (3) other medicinal plants; (4) charm and ceremonial plants; (5) plants used as smoking materials; (6) dye plants; and (7) plants used for technological purposes. In this latter category, the addition of H. H. Smith's identification of the fabric adhering to a copper plaque found in the Hopewell Nicholls Mound as nettle (**Urtica** sp.) fiber (Bull.

Milw. Pub. Mus. X: 221, 1931) would have called attention to an interesting parallel between Wisconsin and Ohio Hopewell fabrics. This discussion of native plant utilization is followed by an interesting chapter on aboriginal influences on distributions, habitats, and genetic variation of plants. Wisconsin specifically enters this discussion only in relation to the problem of prairie formation due to firing of the forest (pp. 96-97). However, the interesting suggestions made by J. T. Curtis in his **Vegetation of Wisconsin** (pp. 462-3) which parallels Yarnell's treatment should not be overlooked.

In the next section which deals with the aboriginal distribution of cultigens, the geographic range is again greater though no precise limits of the "Midwest" region covered are set. Distribution maps plot the locations of corn, squash, sunflower, beans, gourd and tobacco. Time dimensions and varieties are considered and it is concluded that gourd, squash, sunflower and elder appear earlier than corn and beans in the eastern United States. Corn seems to have made its appearance, Yarnell states, before A. D. 100 but beans do not appear east of the Mississippi until after A. D. 1000. He suggests that the earliest corn is to be derived from an early southwestern Basketmaker type.

In the distribution map of corn, only three site locations in Wisconsin are indicated. The tabulation of archaeological remains of cultivated plants (Table XIII), however, lists five sites from the state. The Dietz site should be identified as Late Woodland rather than Middle Mississippi. Given the states included in this tabulation, the list should be amplified. The use of as nearly a complete sample as possible would seem to be of great importance, for how clearly the maps reflect the true distribution of a cultigen at a given time period is a very real problem. It is instructive to consider that wild rice, a major food resource in the early historic period, has been found archaeologically at only one possible location, Kettle Hill Cave in Ohio (p. 65). It is true that Yarnell concludes that it is possible that the prehistoric utilization of this plant might not have been very extensive since the seeds are not found archaeologically (p. 78), but this is a somewhat questionable conclusion. We thus may not yet be in a position to produce sound distribution maps until further analyt-

ical techniques are developed. Perhaps analysis of pollen from site occupation areas might be one approach that would open avenues of collecting information.

The importance of sound maps is seen in Yarnell's attempt to use the distribution of agriculture to make climatic inferences in Chapter VI. The area covered in this attempt lies between central Minnesota and Montreal at the north and between the lower Missouri Valley and the Appalachian Mountains toward the south. It extends from southern Kentucky at the latitude of the confluence of the Ohio and Mississippi Rivers to the Straits of Mackinac. It is a larage region and Yarnell has but 110 prehistoric sites to deal with, sites that range over a considerable period of time. These facts are stressed, not in criticism of his approach, but rather to stress the need to secure or make available more information to permit sounder inferences to be drawn. Yarnell quite correctly does what he can with available data but it is quite possible that an equal number of sites from this same region yielded cultigens that even now are simply resting in museum or laboratory storage areas.

Although other climatic factors are discussed, Yarnell makes his primary comparisons of cultigen-bearing sites with the length of the period of consectuive frost-free days. None of these sites which may represent Early Woodland agriculture are within present-day zones of less than 165 frost-free days. Hopewell sites producing remains of cultivated plants do not fall below an average of 170 frost-free days. Until 1000 A. D., 140 consecutive frostless days appears to have been the limit but some early historic and protohistoric sites apparently approached 120 frost-free days.

As has been stressed above, there is a need for a more adequate sample of sites to provide the basis for sounder inferences of this character. Other variables need to be mapped and tested against the distribution in much the same way that Map 4 deals with the length of the frostless season, together with greater use of the data of historical climatology. In commenting on the various sections of Yarnell's report, stress was placed upon the availability of more data that could have been used in the study. The intent was not to denigrate the value of the study for it is impossible in a broad

distributional study to cite all data. Rather, it was felt that we have here a pioneering venture of very great importance. To enhance its utility we need to suggest revisions, launch new field projects to gather further data, and explore new avenues of interpretation. A series of sucessive editions would indeed be a valuable tool for Midwestern archaeology.

University of Wisconsin
David A. Baerreis,

BOOKS RECEIVED:

Westheim, Paul, THE ART OF ANCIENT MEXICO.
Doubleday & Co., N.Y., 1965
Anchor Books. Price $1.95
Wooley, C. Leaonard, UR OF THE CHALDEES.
W. W. Norton & Co., N.Y., 1965
Price $1.55

IN MEMORIUM

It is with deep regret that the members of the Wisconsin Archeological Society note the death of Dr. Samuel A. Barrett on March 8, 1965, at the age of 85.

Dr. Barrett, Director of the Milwaukee Public Museum for 20 years, was a long-time member of the Society. He served as President from 1917 to 1920, and held many other offices in the Society. In 1926 he was awarded our highest honor, the Lapham Research Medal for distinguished service in archeology. He wrote many articles and monographs on Wisconsin archeology, perhaps the most famous of which was Ancient Aztalan.

As friend and scientist he will be missed.

NOTE: Society annual dues are now $3.

A collection of surface finds by William Schneller of Sparta. From Sparta Township. It includes Woodland points, triangular Mississippi points. In the white area is a tiny Old Copper crescent (less than 2 inches in width), an Old Copper conical point, and two small problematicals of soft stone showing evidence of usage, but not manufacture.

Interesting Wisconsin Specimens

FLUTED POINTS

Left: Quartzite with broken tip. Length 2 inches. Found by William Katt in Section 5, Milford tnshp., Jefferson Co. In the Tom Jackland collection. Right: Chert. Length 1½ inches. Found by Tom Jackland in same area as above.

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WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities

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ANALYSIS OF 19TH CENTURY WHITE KAOLIN PIPE FRAGMENTS FROM THE MERO SITE, DOOR COUNTY, WISCONSIN

by H. Geiger Omwake
Delaware City, Delaware

PREFACE

by Ronald J. Mason
Lawrence University

The report which follows these introductory explanatory remarks is by a scholar most thoroughly qualified to render judgement on this class of historical material. The report is based on his examination and evaluation of a collection of kaolin pipe fragments I submitted to him following the excavation of the Mero site. Because I pressed my opinion that the report is too interesting and valuable to keep from a wider audience of potential benefactors, Mr. Omwake graciously consented to its publication in **The Wisconsin Archeologist.** I have provided photographs of the specimens the author felt should be illustrated.

The Mero site is a multi-component and stratified site on the north shore of North Bay on the Lake Michigan side of the Door Peninsula. Excavation was conducted by the Neville Public Museum of Green Bay under the direction of Ronald J. and Carol I. Mason. The three earliest components at the site are closely sequent manifestations of the newly defined late Middle Woodland North Bay Culture. A fourth component is Late Woodland. The last two prehistoric components represent sequential Upper Mississippian (Oneota) occupations. Finally, the site yielded broken glass, iron implements and nails, pieces of coal, etc. from a late nineteenth century white occupation attributable to a small commercial fishing station and a farm and homestead and affiliated store which functioned partly to provision passing sailng vessels. The first historical records indicate that the locality was unoccupied in historic times until about 1868 (Holand 1917: 436, and local informants) although, of course, it may have seen transient use before that date. The latest aboriginal cultural component was clearly prehistoric, and none of the debris from the historic period could be interpreted as pre-nineteenth century. Information from the daughter of the "original" land owner indicates that her father had Indians working for him at the locality sometime after 1868.

In the usually badly disturbed upper deposits of the site was found an admixture of historic and prehistoric artifacts. These included the stem and bowl fragments of white kaolin pipes. Because these pipes seemingly were attributable to the specific time interval **circa** 1868-1900, because they included examples of what I believed to be the most northwesterly known occurrence of one of these pipe types (TD pipes), because little is known about kaolin pipe types and distribution west of the Appalachians and the eastern Great Lakes, and because the information about the Mero site specimens might prove of interest in Omwake's studies of such pipes, I sent the specimens to that gentleman for his information and study. He responded

by sending the report which is published below.

By and large, Mr. Omwake's detailed analysis of the kaolin pipe fragments from the Mero site has provided information compatible with the known history of white settlement in the area. While many of the pipes clearly date from the circa 1868-1900 period as originally expected, clues as to earlier nineteenth century occupations are especially interesting a augmentation of the sketchy historical record. In conformity with archeological evidence, none of the pipes were of types sufficiently early for pre-nineteenth century aboriginal use.

This report should be of interest as an example of the kinds of information which the study of this class of historical artifact provides. Mr. Omwake, who probably knows more about the history, technology, and diffusion of kaolin pipes than any other scholar active in this field, is well known on the eastern seaboard where kaolin trade pipes are frequently abundant at historic Indian and Colonial and early Federal period sites and have been successfully used in precise dating.

THE OMWAKE REPORT

The collection consisted of 54 bowl fragments and 104 stem fragments of white kaolin pipes from disturbed upper deposits of the multi-component Mero site in Door County.

Procedure

The stem fragments first were separated and then regrouped according to provenience within the site. Five longitudinally fractured fragments and two chips of bone were set aside. Eleven fragments were matched and glued together. Similarly the bowl fragments were separated and regrouped. Several pieces were matched and glued. Finally, an effort was made to match stem and bowl fragments having separate and different provenience numbers. As a result, six bowls were partially reconstructed and stemsections were joined to three of them. The bores of all stem fragments were cleaned out and measured, including the bores of stem fragments attached to bowls or portions of bowls either naturally or artificially. Finally, the bowls were compared with similar examples reported from other sites.

Plain Stems

A collection of plain, unmarked white kaolin pipestems recovered archeologically often presents something of an enigma to an investigator. Certainly they form part of the cultural picture of a site, but, aside from testifying to the fact that white clay pipes were smoked after reaching the site by some means, what else can they reveal? In an effort to derive more than casual meaning from the innocuous little bits of white clay pipestems, one archeologist (Harrington 1954) approach-

ed the problem by measuring the bores of English pipe stems recovered from contexts for which reasonably secure dating could be determined from documentary and/or other sources. He discovered that the bores of pipe stems recovered from sites of more recent date were smaller than those of stems recovered from older sites, and, using the dates available to him, was able to show that as time went on, the size of the bore gradually decreased. Putting it another way, he discovered that as time went on, there were evident preferences for progressively decreasing bore sizes which seemed to focalize on one particular size during certain broad periods of years from the early beginnings of the pipe-making industry, ca. 1600, extending to about 1800. He found also that during the ascendency of any one bore size (after the initial start of the industry) the next larger size decreased in popularity while the next smaller began to increase. Those differences were expressed as percentages in graph form.

The present examiner has found that while Harrington's work was based on collections of English pipe stems, his percentage values seem to be equally valid so far as they go, when applied to collections which almost certainly include significant numbers of stems of Dutch or mixed European origins, and it appears probable that they would hold for collections which contain stems of American origins prior to ca. 1800.

The fact that during almost any time span more than one bore size was in use, despite the preference for some particular size, and the fact that Harrington's time spans were of unequal lengths, tended to reduce the certainty of dating a site, especially if by the most logical interpolation, close dating were attempted.

Another archeologist (Binford 1961; see also Maxwell and Binford 1961: 107-109) dissatisfied with answers such as "There is a 72% chance that stems of a given bore size were made during one period and a 14% chance that they were made during another and a 20% chance that they were made during a third period," devised a mathematical regression formula which, when applied to a stem sample, yields a dating answer in terms of a specific year. Binford himself found that his formula breaks down toward the end of the 18th century

and yields a distressing distorted answer when applied to a collection of 19th century stems.

Since neither the Harrington time span method nor the Binford formula can be usefully applied to collections of stems from such sites as the Door peninsula location, the post-1800, plain, unmarked white clay pipe stems remain just as baffling and uncommunicative as they were before Harrington's work was undertaken.

In the Mero site collection, after matching, and including stems attached to bowls or partial bowls, there were 108 fragments distributed among the 4/64, 5/64 and 6/64 inch bore sizes. The analysis of which may be expressed in terms of the numbers of each size or as percentages of the total sample, as follows:

Size	Number	Percentage
4/64	14	12.93 (13)
5/64	85	78.70 (79)
6/64	9	8.33 (8)
Totals	108	99.96 (100)

These results would seem to indicate that in a post-1800 collection the tendency for bore size to become progressively smaller does not hold. It may be that the widespread proliferation of the pipe-making industry throughout the European countries, aside from England and Holland, plus the spread of the industry to Canada and the United States, resulted in a breakdown of the universality of practice which lesser competition among pipe-makers during the earlier years had tended to sustain.

If the percentages derived from the Mero size collection were interpreted in terms of the Harrington time span method the site would be said most probably to date to the 1750-1780 period. Application of the Binford formula yields a date of 1742. Very obviously neither result is a valid dating for the white occupation of the site which is thought not to have begun until the middle part of the 18th century. The plain, unmarked white clay pipe stem fragments remain something of an enigma. It is hoped that sufficient compilation of the measurements of the bores of plain, unmarked white clay pipe stems recovered from 19th century sites may eventually indicate trends which will contribute to the solution of dating problems.

Nine fragments were tip ends of stems and revealed three separate treatments. In three instances coil from which the stems had been fashioned had been simply and cleanly cut off at whatever length the maker had desired and had undergone no other manipulations. In another three instances the ends of the stems had been flattened so that, in cross section, their general shape had become oval. The flattening process had given two specimens an hourglass figuration which suggests that perhaps the heel of the maker's hand had been pressed down on the coil twice. The ends of the remaining three stems had been compressed toward the bowl, forming a kind of terminal collar which probably made it easier for the smoker to hold the stem between his upper and lower teeth, which seems to have been the intent. None of the three treatments contributes to dating the stems, although the flattening and collar ideas, both related to making use of the pipe easier, probably represent technological advancement. Somewhat similar collars may be seen in modern pipe stems.

Six plain, unmarked fragments had been broken at or close to the point of jointure of stem and bowl. These are nondiagnostic.

It is thought that three matched, tan-colored, plain stem fragments so clearly duplicate the short stem section which has been matched to the tan-brown bowl ornamented with cross-hatched ridges as to indicate the undiscovered presence at the site of a second bowl of this type.

Ornamented and Marked Stems

One short, oval, tan-brown stem fragment carried a mold-imparted, ridged and rouletted decoration suggestive of the distinct ornamentation which is seen on PETER DORNI pipe stems. Although totally unrelated inspiration for the design of the decoration on the tan-brown stem fragment must be admitted possible, it is felt that it probably did derive from the PETER DORNI type of decoration and therefore must be of a date subsequent to the earliest known time at which PETER DORNI pipes were made, **i.e., ca. 1850.** Since it is of tan-brown clay, it probably represents an American effort at imitation.

Two fragments of PETER DORNI stems were present, one attached to a small portion of the back of its bowl, the

other broken in such a way that only **P** is visible on one side and **NI** on the other. Peter Dorni was a pipe-maker in Northern France **ca. 1850** whose pipes became so popular that they were widely imitated by pipe-makers of Gouda, Holland, for the export trade to the United States. Some PETER DORNI stems also carry the words GOUDA and HOLLAND which mark them as imitations of the original. Others on which the lettering and decoration are crudely executed also are probably imitations. The Mero site specimens seem to fall into this category, the letters being unclear and smudged and the general tenor of the ornamentation being sloppy. A third specimen on which only the initial rows of "oak leaves" may be seen probably was a PETER DORNI pipe.

Four stem fragments of varying lengths, two attached to small portions of their bowls, carried some part of the words NEW YORK and CUTTY, in relief, on their opposite sides.

Known in Ireland as a "dudeen," the short-stemmed pipe, so short indeed that the heat from the burning tobacco in the bowl was said to warm the nose, was called a "cutty." Those affectionate terms were popular at the end of the 17th and the beginning of the 18th centuries. "Dudeen" seems to have disappeared but "Cutty" has hung on, meaning, very simply, a "very short-stemmed white clay pipe."

The remains of the largest of the Mero specimens suggests that the bowl may have been quite large and ornamented with unusually broad flutes. All of these specimens came from test pit 39. From the same area were recovered three bowl fragments having very broad flutes. Examination of the smallest of the three suggests that as the flutes approached the base of the bowl and the stem they were greatly restricted. Although none of the bowl fragments can be matched to either of the stem fragments to which adhere portions of their bowls, or to each other, the resemblances are so striking as to indicate that the three bowl fragments did, indeed, once belong to NEW YORK - CUTTY stems, perhaps to the two of which only the very small sections remain.

The indicated large size of the bowl of the NEW YORK - CUTTY pipes suggests manufacture late in the 19th century. Apparently some pipe manufacturer in New York City simply adopted the popular name "Cutty" in its original—short-

stemmed—meaning and incorporated it on his pipe stems as a sort of sales "come-on".

One stem fragment originally carried the words MURRAY-GLASGOW on its opposite sides, only MUR and GOW now remaining. Murray and Company was in business in Glasgow, Scotland, from 1826 until 1861-62 when the firm was absorbed by Davidson, Thos. Jr., and Company.

Bowls — description

Five small, plain bowl fragments could not be definitely associated with any of the types of bowls listed below.

At least seven types of bowls were represented in the Mero site collection, as follows:

1. plain except for hatched lines on the mold marks.
2. plain but having a "rouletted" line around the bowl just below the rim.
3. plain (apparently) but having "oak leaves" on either side of the front mold mark.
4. TD bowls

   (a) plain (but possibly fluted) except for letter D on the back of the bowl.

   (b) letters TD within a circle of 13 stars on the back of the bowl with stars around the rim.

   (c) cross-hatched bowl which once had a large circle on the back containing a circle of 13 stars surrounding the letters TD.
5. fluted bowls

   (a) small bowl, set upright almost at a right angle to its stem, having lower half fluted and upper half divided into two horizontal bands, the lower of which contained a horizontal row of vertical, raised, diamond-shaped knobs each separated by two tiny raised dots placed one above the other, the upper horizontal band containing a row of raised and hollowed-out circular ovals irregularly separated by raised, vertical, key-like figures; oak leaves along both mold marks; tiny spur.

   (b) small bowl, set at slightly obtuse angle to its stem, having lower half decorated with wide, open flutes in the center of each of which a series of raised dots descends chain-like toward the base of the bowl; pronounced spur.

(c) medium sized bowl having lower half fluted and upper half plain; "oak leaves" along both mold marks.

(d) medium sized bowl having lower half fluted, the flutes being separated by thin raised lines; mold marks hatched: near bowl, stem has indistinct ornamentation which consists mainly of two parallel raised lines which encircle it.

6. small tan-brown fragment having horizontal grooves and raised lines which border a wide horizontal panel which contains looped "chains" of raised dots plus several unclear relief decorations randomly placed.
7. small fragment of black bowl which had a wide convex collar below the rim.

Bowls — discussion

Discussion of the bowls will follow the order in which the types have been listed above.

1. The four plain bowl fragments and the single stem fragment which has a small portion of the base of its bowl attached are non-diagnostic. Hatching on the mold marks is the simplest form of ornamentation and may be a derivative of the hatching which appeared around the rims of some of the 17th century bowls and which was itself probably a form of "rouletting" imposed on the bowls by a "mushroom" tool in England and by "une petite scie" (a little saw) in Holland. As judged by the largest of the bowl fragments, all four were probably contemporary with the fluted bowls of Type 5.

2. This single rouletted fragment was derived from a relatively large, thin, smooth-textured, well-finished plain bowl. Its exact counterparts, with and without the Dutch "warrior" mark, were recovered from the foundation-cellar area of the Seven Mile House on the old road from Albany to Schenectady, New York, perhaps datable as early as 1731, in which year a lease to the property was granted by the city of Albany. A map of 1757 shows a dwelling on the site and another map of 1818 indicates that a tavern, or inn, had been built. This structure was declared unfit for human occupation in 1890 and was torn down. The most probable period for the arrival of the large quantity of white clay pipes at the site was, of course, the tavern period from ca. 1818 to 1890, roughly 70 years. Associated with the Seven Mile House sample were PETER DORNI stems and many types of fluted

bowls. Most significant, perhaps, from a dating standpoint was a stem on whose sides was the slogan "A Public Office Is A Public Trust," a slogan used by Grover Cleveland during his presidential campaigns of 1884, 1888 and 1892. Since the place was torn down in 1890, the stem must have been prompted by one of the earlier campaigns. The PETER DORNI stems could hardly have reached the site before 1850 and probably are of somewhat later date. It is most likely, then, that the large, smooth, rouletted bowl fragments should be thought to date to the general period from ca. 1850 to ca. 1890.

This projected dating may be offset somewhat by an exact duplicate specimen, having the Dutch "warrior" mark, which was recovered from the foundation area of a sutler's store within the compound of Fort Mackinac, Michigan. The store was erected in 1800 and was torn down to make way for a larger structure in 1850. Thus it is clear that the large, smooth, rouletted bowls were in distribution prior to 1850. It is not clear how early they began but this may have occurred ca. 1825 when pipe bowls became much larger than they formerely had been. The "warrior" mark goes back to the middle part of the 17th century in Gouda records. Certainly they are more likely to have arrived at the Seven Mile House site during the early years of the tavern period than during the later years.

3. It is difficult to assign a date to the plain bowls whose only ornamentation consists of "oak leaves" along the mold marks. A few English examples are known from the 18th century but this type of ornamentation, along with fluting, became common all over England in the 19th century and without doubt was widely imitated or adopted by pipe-makers in other countries, including the United States. As judged by the spurred fragments to which portions of the bowls adhere, these Mero site specimens were probably contemporary with the fluted bowls at the site.

4. (a) One gets the idea from this tiny fragment of TD bowl that the bowl was not so big, round, and squat as the plain pipes of the last quarter of the 19th century. It probably dates to the third quarter of that century; the long slender D is much like that seen on a pipe excavated at Fort Berthold II, near

Bismark, North Dakota, at which the principal trading post period ran through the 1850's and 1860's. It is not possible to tell whether or not the bowl from which this fragment was broken was fluted.

(b) The 13-star-encircled TD pipes seem first to have appeared on American sites of the War of 1812 period and to have persisted in numerous variations (additional stars around rims and elsewhere) for a considerable number of years. Although one was recovered at Fort Berthold II which existed from 1845 to 1893, it should be noted that none has been recovered from the Missouri River Valley military and trading post sites which came into existence after 1860. They appear datable to the general period from ca. 1812 to ca. 1850.

The interesting feature of the Mero specimen is that the odd (13th) star is placed precisely on the mold mark. Such an accomplishment represents a technological accomplishment of the mold maker. In other recorded examples there are six stars on the left of the mold mark and seven on the right. An exception, recovered at Fort Michilimackinac (1715-1781) has seven stars on the left and six on the right if the specimen has been correctly represented in the drawing furnished to this examiner. The closing date of Fort Michilimackinac having occurred before the 13-star encircled TD's are thought to have come on the scene, the specimen found there is believed to be intrusive, probably lost or discarded during one of the British-American military operations which subsequently took place in the area.

Several varieties of 13-star encircled TD pipes were recovered at Fort Mackinac (1781-1895), the successor to Fort Michilimackinac. They were among the pipes excavated from the foundation area of the sutler's store which existed from 1800 to 1850 and probably reached Fort Mackinac during its occupation by American troops in the War of 1812.

The absence of pipes of this type from trading post and military sites which came into existence after 1860 would seem to establish a terminal date for their manufacture. Their presence at American sites of the War of 1812 seems to establish their beginning date and to testify to their American origin. In general, then, they may be dated to the period ca. 1812 to ca. 1850.

(c) The cross-hatched tan-brown colored bowl originally exhibited on the back a large round circle within the circumference of which was a smaller circle of 13 stars which enclosed the letters TD in relief. An exact counterpart was recovered from the foundation area of the settler's store at Fort Mackinac (1800-1850) and another was recovered from the site of the John Deere Blacksmith Shop, Grand Detour, Illinois (1837-1847).

5. (a) The sole recorded exact duplicate of this bowl was recovered from the foundation area of the sutler's store (1800-1850) at Fort Mackinac. Before 1850 the bowls of English pipes were small, much smaller than they had previously been and were again to become after 1850.

(b) No duplicate of this bowl has been recorded. It's small size, however, marks it as contemporary with type 5a above.

(c) Exact duplicates of these bowls were recovered from the John Deere Blacksmith Shop site (1837-1847). However, another was found beneath the porch of an old farmhouse near Lewes, Delaware, said to have been built about 1875. In this instance, of course, the pipe could have fallen beneath the flooring of the porch at any subsequent date. Many whole and fragmentary examples have been reported as surface finds in the middle Atlantic and north Atlantic states, and no very great age should be accorded them. Apparently these represent a bowl type whose popularity persisted for most, if not all, of the second half of the 19th century.

(d) These bowls are simply variations on the basic fluting theme of the type 5c examples. Exact duplicates were present at the John Deere Blacksmith Shop site and many more have been surface found in the East. They appear to parallel type 5c in time as well as distribution.

6. No similar bowl has previously been recorded. The tan-brown color (almost like a slip) suggests American origin and the elaborate character of the decoration suggests a late dating. These are, however, only "guestimates."

7. No similar bowl fragment of white men's manufacture has been previously recorded. If the texture and color of this fragment did not so closely resemble the texture and color of the core of type 6 above, one might be tempted to suggest an aboriginal origin for it.

Conclusions

Present in the collection from the Mero site are pipes of Dutch (PETER DORNI, rouletted plain), Scottish (MURRAY-GLASGOW), American (13-star encircled TD, san-brown cross-hatched TD, probably the plain TD), and several varieties of "oak leaf" and fluted bowls which may have been of American or English origin. While the "oak leaf" and fluted bowls have been documented in England (Oswald 1960) and are represented in France (Duhamel du Monceau 1771), it is impossible to believe that they were not also made in America, particularly during the second half of the 19th century.

It is quite possible that many of the pipes (PETER DORNI, rouletted plain, MURRAY-GLASGOW, all the TD's and probably fluted types 5a and 5b) may have reached the Door Peninsula site a number of years before its 1868-1900 occupancy. Of these it is possible that the MURRAY-GLASGOW, the rouletted plain, all of the TD's and fluted types 5a and 5b could have arrived during the second quarter of the 19th century. It is unlikely that any of them except the PETER DORNI'S should be associated with the 1868-1890 occupancy.

The PETER DORNI, fluted types 5c and 5d, and the NEW YORK-CUTTY pipes seem to be those most likely to have reached the site during its 1868-1890 occupancy, but the PETER DORNI pipes probably should not be dated later than ca. 1875. Fluted types 5c and 5d probably could have arrived at any time during the 1868-1890 occupancy and the NEW YORK-CUTTY pipes probably were the latest arrivals.

The MURRAY-GLASGOW stem almost certainly predates the 1868-1890 period of occupancy because the company went out of business in 1861-62. Such a fragile article as a white clay pipe stem is not likely to have survived the rigors of frontier usage for five or six years. Despite the lengthy survival qualities which white clay pipe bowls and stems possess when protected by an archeological environment their life span in actual usage must have been very short, especially when they were unprotected by the wooden or metal cases in which city owners, whose lives were consid-

ably more sophisticated than those of the frontiersmen, kept them.

For the PETER DORNI, rouletted plain, MURRAY-GLASGOW, and fluted types 5c and 5d a compromise dating from ca. 1850 to ca. 1875 appears justifiable. For the TD's and fluted types 5a and 5b such a dating would not be very realistic.

It would be concluded that the white man's influence penetrated to the Mero site somewhat prior to ca. 1850 whether there was aboriginal contact or not.

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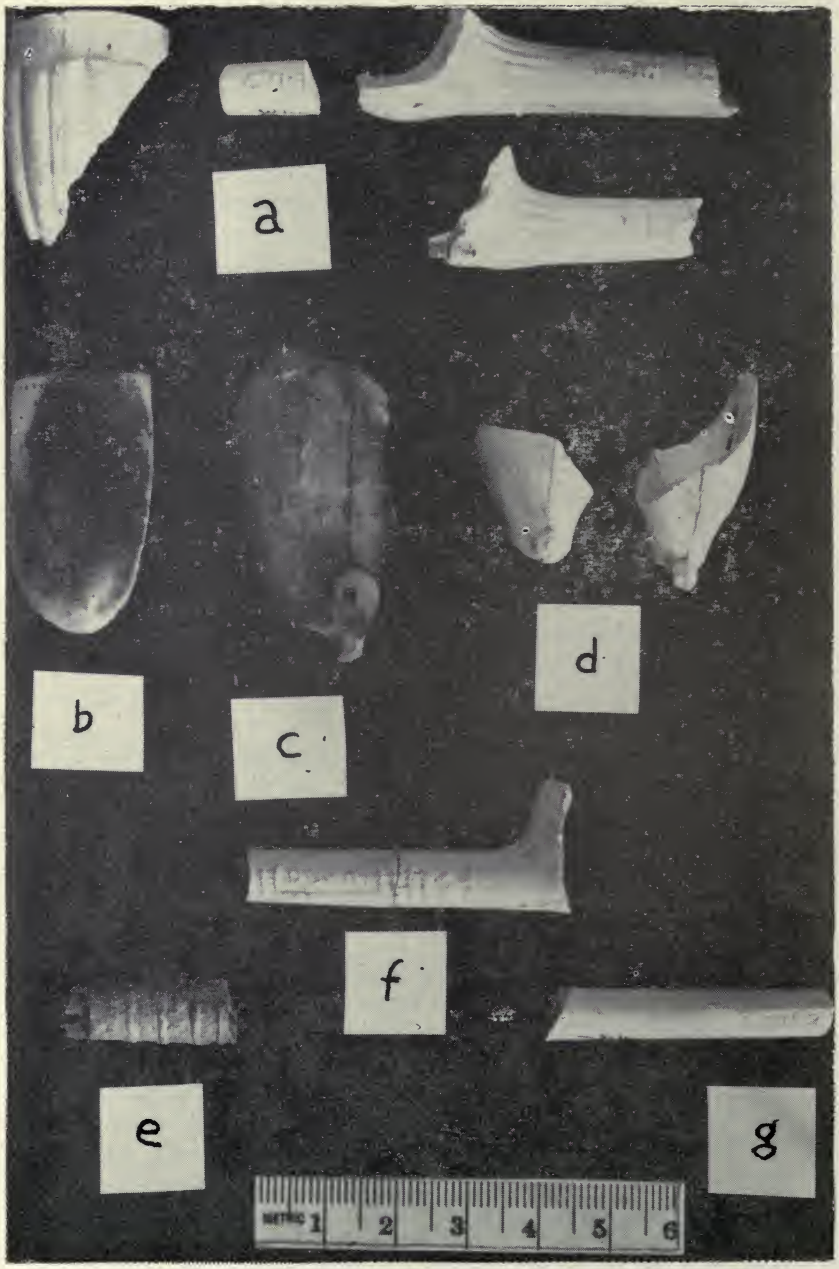

FIG. 1. a) NEW YORK-CUTTY stem and bowl fragments, probably late 1800's. b) Plain rouletted bowl, circa 1850-1890 (probably of Dutch origin). c) 13-star encircled TD bowl with star on mold mark, circa 1812-1850. d) Plain with oak leaves, post 1850. e) Pseudo-DORNI, post 1850. f) PETER DORNI, 1850-? (probably of Dutch origin). g) MURRAY-GLASGOW stem, circa 1826-1862 (conceivably a few years later).

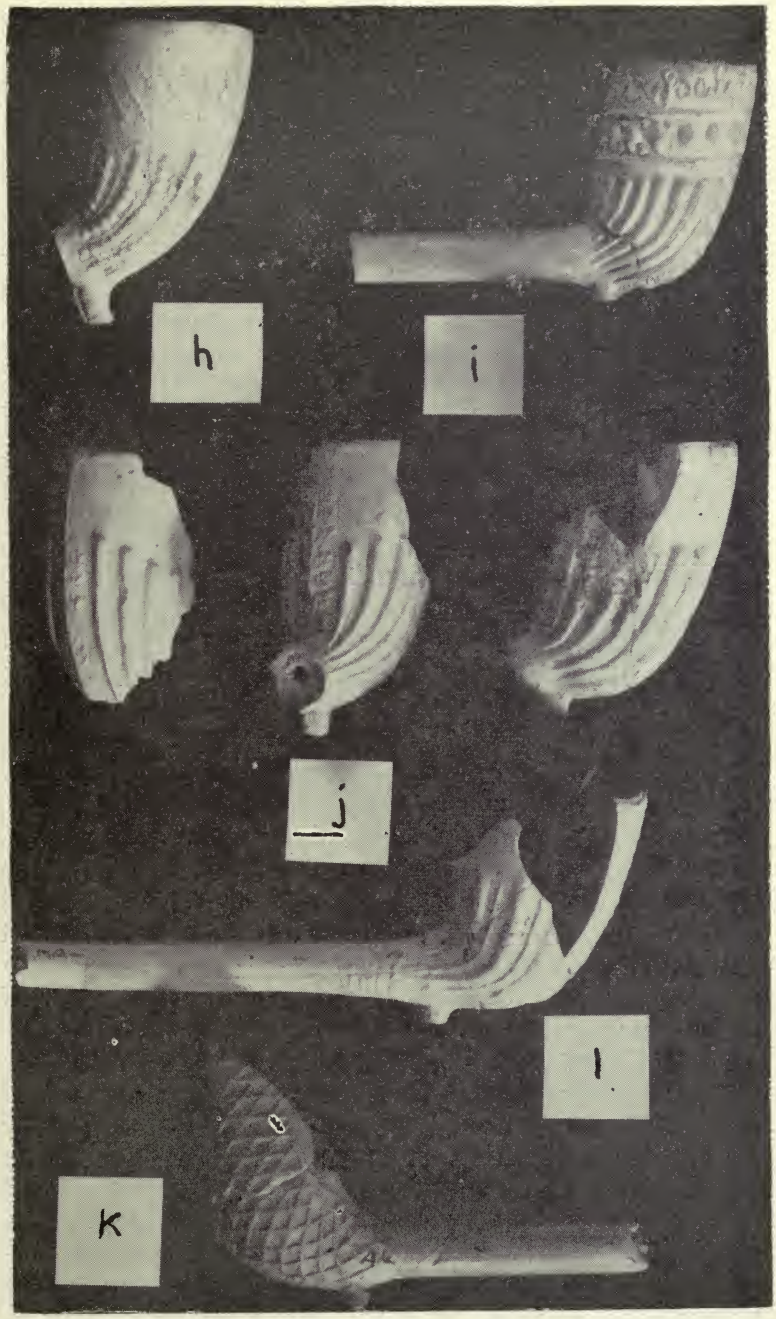

FIG. 2. h) Fluted type 5b bowl, circa 1825-1850. i) Fluted type 5a. circa 1825-1850. j) Fluted type 5c, circa 1850-1875. k) Cross-hatched TD. circa 1837-1847. l) Fluted type 5d. circa 1850-1875.

EXCAVATION OF TWO BURIALS AT THE MATERIAL SERVICE QUARRY SITE, LA SALLE COUNTY, ILLINOIS

Charles J. Bareis
University of Illinois

On December 2, 1964 ,the author was notified by Walter Walker of the Marblehead Lime Company that human skeleton remains had been exposed during grading operations in a shale quarry of Material Service [1] three miles east of Ottawa, LaSalle County, Illinois. Mr. Walker indicated that the partially destroyed area was quite likely the location of a burial mound and that pottery and mussel shells could be observed in the mound fill redeposited by heavy equipment. Subsequent excavation of two burials in the graded area by the author and James P. Anderson of the Illinois Archaeological Survey from December 28 to 31 substantially confirmed Walker's description. Reconnaissance further suggested that a village is probably present on a ridge north of the mound.

[1] The offices of the Marblehead Lime Company and Material Services are located in Chicago and both are divisions of General Dynamics Corporation.

The Material Service Quarry site, designated Ls-50 in the files of the University of Illinois, is situated on bluffs approximately one mile north of the Illinois River.

The eastern margin of the site, which constitutes the western edge of the machine cut in the quarry, is constantly under destruction. Refuse, consisting of sherds, chipped stone and ground stone tools, chipped stone debris, animal bones, and mussel shells, is scattered over an area of perhaps an acre in extent west of this cut indicating the presence of a number of activity units at the site in addition to the burial mound.

Burial 1 consisted of two individuals placed in a shallow pit on the eastern edge and apparently near or at the base of the partially graded mound. Individual 1 was represented by a fully articulated, young adult female placed on the left side in a semi-flexed position in which the right arm was folded over the abdomen and the lower legs bent back close to the pelvis. This individual was interred in a north to south direction with the head oriented south, and a feature of the perpendicular skeleton was the absence of the left hand. Individual 2 was represented by only a few skull fragments

of an infant located underneath the right side of the rib cage of Individual 1.

Grave goods were associated with both individuals of Burial 1. A restorable Langford ware vessel with a mussell shell spoon inside was placed on the feet of Individual 1 (Fig. 1), and a mussell shell spoon was placed over the skull of Individual 2. Other items, such as sherds, chipped stone debris, rock fragments (not fire-cracked), a few human bones, animal bones, mussel shells, and charcoal fragments, were scattered througout the fill of the grave.

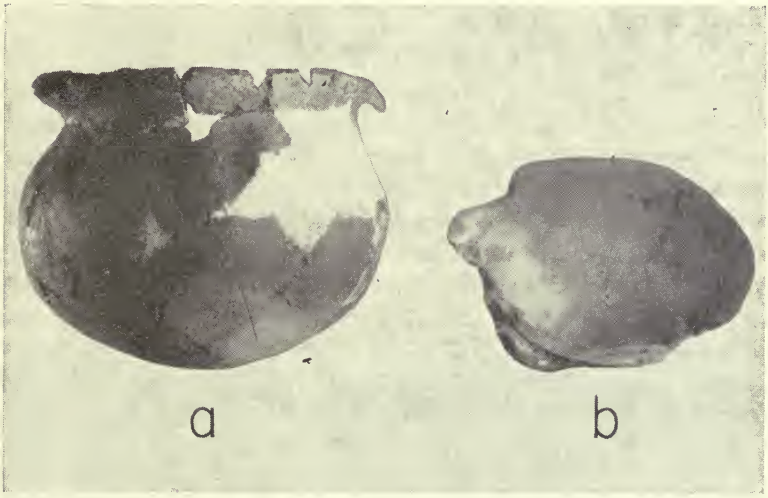

FIG. 1. Grave goods associated with Burial 1, Individual 1. a, Langford ware vessel; b, mussell shell spoon. Height of a, 11.48 cm.; length of b, 9.46 cm.

Burial 2 was located 9.5 feet south of Burial 1 in the mound area and had been badly disturbed by heavy equipment. The skeletal material consisted of a few bones of the axial and appendicular skeletons of one individual, apparently positioned in an east to west direction, and a fragment of a pelvis of another individual. Grave goods were not recovered with Burial 2.

All the archaeological information salvaged from the Material Service quarry is associated with an Upper Mississippian component. The pottery sample consists of grit tempered Langford ware, and most specimens including the vessel ex-

hibit a smoothed over cordmarked surface. The pot, which has a globular shape, two lip lugs, and is decorated with oval impressions between the neck and shoulder (cf. Griffin 1943: 278, Pl. CXXXVIII, Fig. 6-7) and circular, stick punctates on the lip, can be classified as an example of the Plain Surface variety of **Langford Trailed** (cf. Brown, ed. 1961: 31-35; Griffin 1948: 125, footnote 4). Moreover, there are four decorated sherds in the ceramic collection and they are also of this variety. Other attributes of the mortuary data which assist in establishing the affiliation of the Upper Mississippian component include: presence of a mound, burial in a semi-flexed position, association of a pottery vessel with a female burial, and placement of a mussell shell spoon inside a pot used as a grave offering.

Although it is not possible to make a detailed comparison with Upper Mississippian complexes in northern Illinois on the basis of the information obtained from the quarry, it appears quite likely that what has been excavated represents a small segment of the mortuary unit of a component that equates temporally and in large culturally with Period B of the Fisher site (Griffin 1946) and with the latter portion of the Heally component at the Zimmerman site (Brown, ed. 1961).

The work underaken at the Material Service quarry is another example of salvage archaeology at an important site that will be completely destroyed during the course of normal commercial operations. In this case the value of the recovered data has been the discovery of another locus of Langford pottery in the Illinois River Valley.

ACKNOWLEDGEMENTS. I would like to thank Material Service for permission to conduct excavations and continue further investigations in their quarry east of Ottawa. I am particularly indebted to Linus Freeman, Milton Gehle, and Walter Walker of Material Service and the Marblehead Lime Company for their cooperation and assistance in conjunction with the initial excavations. James P. Anderson undertook the black and white photography in the field and for this report, and restored the vessel in the accompanying illustration.

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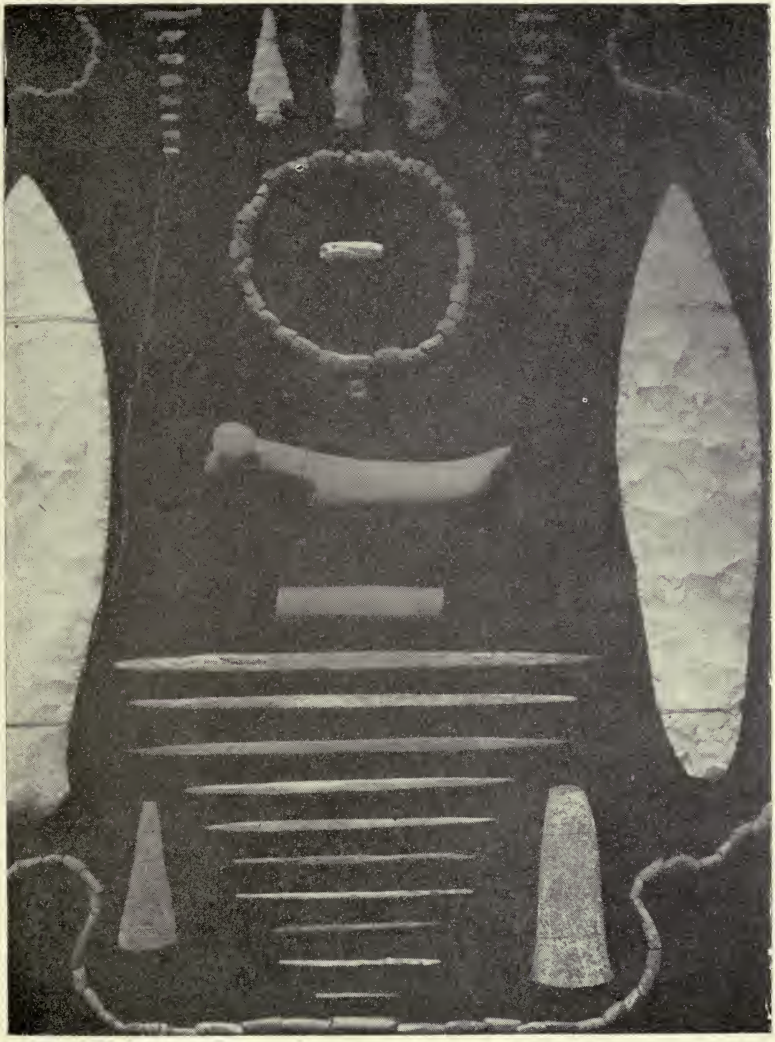
A RED OCHER SITE IN FOND DU LAC COUNTY

Robert Ritzenthaler

In the March 1944 issue of the Wisconsin Archeologist, Vol. 25, No. 1, pp. 13-16, Mr. Henry Rueping described Red Ocher burials unearthed in 1942 in the Huber gravel pit in the northeast quarter of the southwest quarter of Section 7, Empire Township, Fond du Lac County, Wisconsin. The specimens recovered were well described, but no illustrations were included. Because of the importance to the scholar of having the illustrative material with the text it appears worthwhile to show the material and rerun the original description by Mr. Rueping.

Also included here are illustrations of the two male skulls. While calipers were not available it appears that one is mesocephalic, the other dolichocephalic. Both have rather high nasal bridges and one shows convincing evidence of cradleboarding. All the artifacts were reported as being interred with these two burials.



The Rueping inventory read as follows:

"A widely diversified list of artifacts was recovered. Two drills, three inches long, made of blue hornstone, have small side lugs or prongs extending horizontally. These specimens are nicely chipped. A third drill of inferior yellowish chert is also three inches long, but is stemmed. Its crude chipping was due to the nature of the material. Two copper celts or wedges, one and one-eighth by three inches and one and one-

half by three and seven-eighths inches respectively, are of a common type. Both have curved cutting edges. Eighteen flat copper fragments of problematic use, one-fourth to three-eighths of an inch wide and from three-eighths to one and one-fourth inches long, were found while sifting. These pieces, extremely corroded, were possibly all parts of one or more bracelets, as the longer ones are slightly curved. Ten copper awls, squared in section and pointed at both ends, range in length from one and one-eighth to ten and one-eighth inches.

One curious cylindrical bone bead, five-sixteenths by one and one-fourth inches, is perforated at both ends, the holes entered at the centers and extending at an angle of forty-five degrees through the sides. The two points of emergence are about ninety degrees from each other. A pronounced groove connects these side openings, thus forming a spiral.

Two strings of copper beads were found. The longest strand numbers two hundred ninety-one and is eighty-four and one-fourth inches long. The individual beads range in diameter from one-eighth to three eighths of an inch and from one-eighth to one and three-eighths inches in length. The short strand numbers forty-six and is fifteen and one-fourth inches long. These beads range from five-sixteenths to seven-sixteenths of an inch in diameter and from three-sixteenths to five-eighths of an inch in length. The walls of these beads are thicker than those of the longer strand. A few beads, not included in the foregoing figures, were so completely corroded that they crumbled when touched. It is believed that the long strand is the greatest numerically and the longest ever found in Wisconsin. Although the surrounding soil was sifted, it is entirely probable that some beads were missed and hauled away in the gravel subsequently removed. All the specimens were made by the usual method of bending a flat strip of metal around a core and overlapping the edges.

Two ceremonial knives or blades, three by twelve and three-eighths inches, and three and three-eighths by thirteen and one-half inches, respectively, are made of beautifully chipped salmon-tinted chert and were, no doubt, quarried from the same sources. They were both similar in outline to the blade of a Roman broad sword.

Two birdstones were found. One of green banded slate is of the bar type. Both ends were broken off and indicate evidence of having been slightly smoothed. Its cross-section resembles a letter "D." This specimen is nine-sixteenths of an inch wide, five-eighths of an inch wide, and three and three-eighths inches long. It is not perforated.

The second birdstone is of so-called pop-eyed type with disk-like appendages. It is also of green banded slate but is lighter in color and the stripes are more pronounced than those of the first mentioned. It is six and three-eighths inches long and one and eleven-sixteenths inches high.

The single remaining eye is three-fourths of an inch in diameter. The right one had been broken off and an unusual attempt to attach it to the head again has been made. Several loads of the surrounding soil and gravel were sifted but the missing disk was not found. In the center of the fracture a hole three-eighths of an inch in diameter on the outside had been drilled. This hole extended downward entirely through the head and emerged at a point just below the other eye, the diameter at its emergence being only one-eighth of an inch. Apparently a hole had been drilled through the broken eye in alignment with the one in the head, the purpose being to fit a a wooden peg or pin to the two in an effort to bind them together. The obtuse angle of the hole made a tight secure fit between the pin and stone impossible and it is quite likely that the eye was lost by its original owner before interment.

Another unusual feature of this specimen is that it has no base perforations. Ordinarily this absence would indicate that the birdstone was unfinished, but the great amount of work done in repairing the fracture in addition to the fact that the ceremonial was buried with its owner all without being drilled, makes it appear certain that the omission was intentional and that a different method of mounting this specimen was employed."

CODIFICATION OF WISCONSIN'S ARCHAEOLOGICAL SITES

William M. Hurley

CODIFY: . . . [1] **code** (body of laws) + **-ify** 1: to reduce to a code (as laws) 2a: **Systematize:** arrange in systematic or comprehensive order b: to make an appropriate part of a system or classifacation: **Classify.**

[1] Webster's Third New International Dictionary First Edition, Unabridged. C. & G. Merriam Co., Springfield. 1961.

INTRODUCTION

In 1942, a "Committee for Codifying Types of Archaeological Sites in Wisconsin" prepared a code or system of symbols to be used in recording Wisconsin archaelogical sites by location, type and number. It was believed that this codification would eliminate duplication of site names, supply a new name or number for any given site, encourage accurate reporting of site location, and finally, stimulate research (McKern, et. al., 1943: 10). For two decades this system was periodically used to code new sites and to catalogue artifacts recovered from site excavations. The arrangement of archeological sites into a systematic or comprehensible order was held in abeyance. In May, 1961, Robert Ritzenthaler requested that a meeting be held at the Milwaukee Public Museum to begin this ordering. Kermit Freckmann (then Chairman of the Wisconsin Archeological Society's Surveying and Codification Committee), Robert Ritzenthaler, and the writer prepared a codification card (Fig. 1).

Since May, 1961, over 7000 reported sites have been checked; of these approximately 4500 have been codified. The first stage in this work was the reorganization of the "Wisconsin Archaeological Publication" and the "Archaeological Site" files at the Milwaukee Public Museum. These files were compiled during the W. P. A. period of the 1930's and the sites were arranged according to "earthworks, refuse pits, burials, artifacts, etc." Fifteen thousand cards were sorted before codification of sites reported prior to 1940 could begin. Next, the seventy Charles E. Brown manuscript files in the State Historical Society were carefully checked to fill in any "gaps." The next sources were the State Historical Society files and all published archaeological literature dealing

TYPE OF SITE:

Mounds ☐ Village ☐ Campsite ☒ Garden Beds ☐

Petroglyphs ☐ Worksite ☐ Cemetery ☐ Cache ☐

Quarry ☐ Cave or Rockshelter ☐ Other:

Ve-167

CODE NUMBER

Name of site	County	Township and range	Location in section	Present owner
Hanson Site II	Vernon	Stark T.13 N., R.2 W.	NE-SE-NE-NW-NW$\frac{1}{4}$ of Sec.17	Mr. Derald Hanson
Reported by: Wm. M. Hurley Date 8/1963				

Geographical Location: In Spring Valley west of S.T.H. 131. West of farm buildings and adjacent to farm lane.

DESCRIPTION OF SITE:

Site is on floodplain of creek tributary to the Kickapoo River. The site is 50' by 100' and located in the farm garden. Paleo-Indian artifacts have been recovered from this site.

CULTURE: Paleo-Indian

REFERENCES:

Wisconsin Archeologist	Series	Vol.	No.	Page

Kickapoo Reservoir Project - State Historical Society of Wisconsin.

SPECIMENS FROM SITE IN POSSESSION OF: Mr. Derald Hanson and S.H.S.W.

REMARKS: Site is in pool of Projected Kickapoo Reservoir. Site tested August, 1963 and is recommended for extensive excavation.

with Wisconsin. Approximately 2500 vague, inaccurate, or duplicate site reports were disregarded.

THE CODIFICATION CARD (Fig. 1)

The codification card contains appropriate sections for pertinent information and refers the researcher to earlier site reports, monographs, and related archaeological sites. **Type of Site** is checked by the codifier and eliminates the suggested superscript "o" for mounds and "c" for caves (McKern, **et al.,**: 12). Aztalan, thus, would be Je-1 and not Je^{vo}-1. These checked boxes can be "punched or slotted" at a later date, in the manner of an IBM or a marginal punched card, to facilitate the removal of types of sites, i. e., mounds for distributional studies. Battlefields, trails, and fishweirs would be examples of sites to be recorded in the **Other** category. **Code** refers to the county code that was devised in 1942 (**Ibid,** : 13) with the addition of Menominee county, Me, (Fig. 2). **Number** is also retained from the proposed system:

> ". . . these numbers would arbitrarily be assigned to sites regardless of the time when they were first named or reported; for example, a site reported by Lapham might be given the number '70.' whereas one reported this year might receive the number '1.' This type of non-historical number sequence is necessary in order to permit those authorized to assign numbers and record sites by code to progress regularly with their work as the necessary rechecking of site data is completed" (Ibid.: 14).

Site designations are, therefore, binominal in character; consisting of a symbol for county and a number for the site. County is indicated by a two letter abbreviation (Fig. 2) and the number refers to a specific site within the indicated county. These codification cards are now on file in the anthropology departments of the State Historical Society of Wisconsin and the Milwaukee Public Museum. Each card is filed alphabetically according to county and within the county group they are further subdivided according to political township. The government township and range is also recorded in the **Township and Range** section. Both systems were utilized because there are examples of government townships with more than one political township within its confines. Finally, the card is further subdivided numerically according to section number. Thus, if there were a site in Adams county, Adams township, and in section one, which had been coded Ad-1, it would be numerically the first site in Adams county and al-

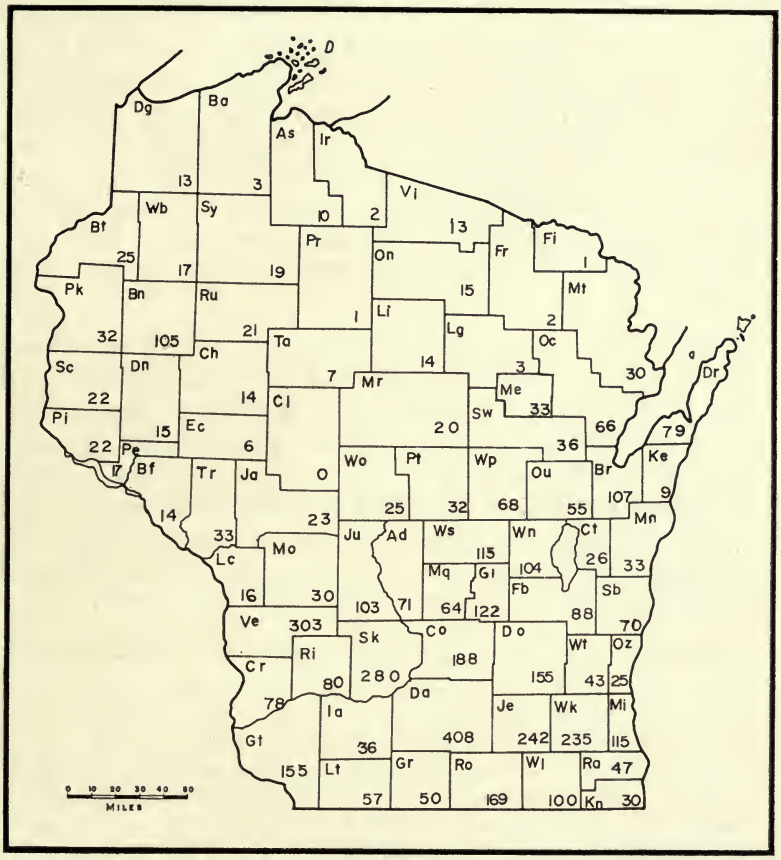


FIG. 2

phabetically the first card filed for the state. If more than one site occurred within the section, consecutive numbers would be given.

There are several ways to view an archaeological site. Aztalan was a Middle Mississippi village that had connections with the indigenous Woodland Indians. The southeast corner of the village has yielded material associated with a later Woodland occupancy. The two truncated pyramidal mounds within the stockade are associated with the Mississippian occupancy. The conical mounds, west of the stockade are associated with another Woodland culture. Therefore, each or all of the exterior and interior mounds could be given separate numbers and the Middle Mississippi and Woodland com-

ponents coded separately. This site complex could conceivably be Je-1 to Je-24. Provenience and association have been taken into consideration when codifying a site complex with one or several numbers. A site, it was decided, will be given one number until excavation; it is the archaeologist's decision to separate, for example, a "village site" into distinct "camp sites." The stockaded village site of Aztalan and the associated pyramidal mounds was, therefore, coded Je-1. The conical mounds outside the stockade were given another code number.

Name of Site (Fig. 1) refers to the property owner, previous owner, or a site name, such as "Lizard Mound" or "Silver Creek" sites. **Reported by** refers to the reporter as well as the date the site was reported. **County** is self-explanatory. **Township and Range** (Fig. 1 and 3) require the political and governmental townships plus the government range. **Present owner** should contain the name of the landowner and the tenant, if this is the case, and/or the name of the administrator if the land is an estate.

Location in Section. Julian W. Low (1952: 10) defines a section in the following manner:

> "In 1785 a law was enacted for the purpose of subdividing public lands into square townships and sections, the townships to be 6 miles square and the sections 1 mile square. The sections . . . were to be numbered in east-west rows, alternately west and east, starting with **1** in the northeast corner and ending with 36 in the southeast [Fig. 3]."

An archaeological site, therefore, occupies a specific geographical location. This location is expressed from the smallest to the largest unit, i. e., the site Ve-167 (Fig. 1 and 3) is in the NE¼ of the SE¼ of the NE¼ of the NW¼ of the NW¼ of Section 17, Stark township, T. 13 N., R. 2 W. A site location can be easily ascertained by reference to a county plat book. Sites reported according to township, range, and section were coded in the hopes that the 640 acres that make up a section (Fig. 3) will be surveyed to place the site in its

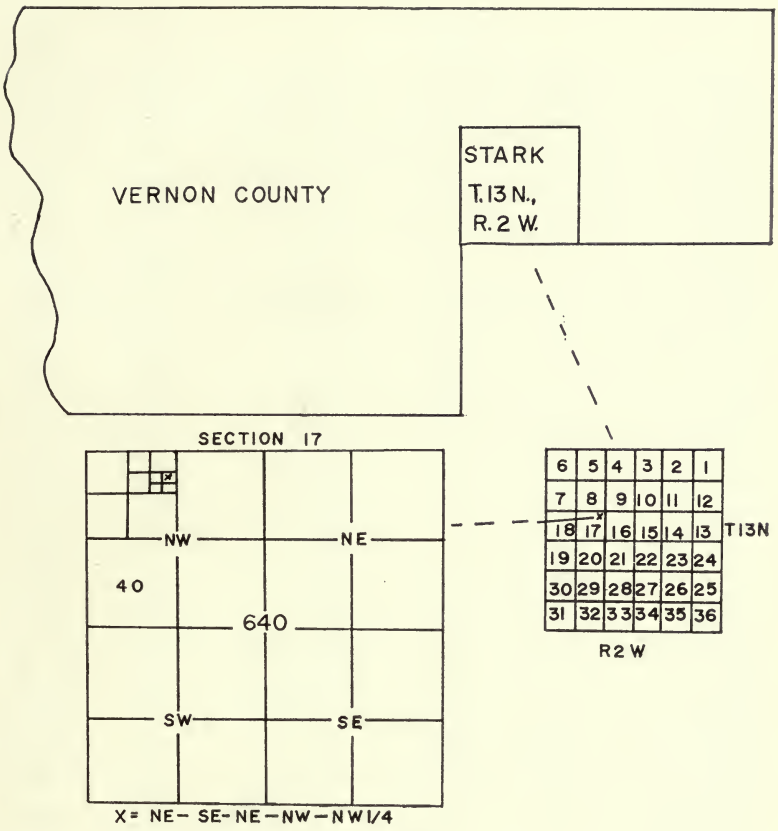


FIG. 3

proper quarter-section. The site reported in Figures 1 and 3 locates the site within approximately one-half mile. Not all previously reported sites were located in this fashion, but it is suggested that all future sites be reported at least by quarter-quarter sections (40 acres).

FIG. 4

County	Code	No. of Sites Coded	County	Code	No of Sites Coded
Adams	Ad	71	Marathon	Mr	20
Ashland	As	10	Marinette	Mt	30
Barron	Bn	105	Marquette	Mq	64
Bayfield	Ba	3	Menominee	Me	33
Brown	Br	107	Milwaukee	Mi	115
Buffalo	Bf	14	Monroe	Mo	30
Burnett	Bt	25	Oconto	Oc	66
Calumet	Ct	26	Oneida	On	15
Chippewa	Ch	14	Outagamie	Ou	55
Clark	Cl	none	Ozaukee	Oz	25
Columbia	Co	188	Pepin	Pe	17
Crawford	Cr	78	Pierce	Pi	22
Dane	Da	403	Polk	Pk	32
Dodge	Do	155	Portage	Pt	32
Door	Dr	79	Price	Pr	1
Douglas	Dg	31	Racine	Ra	47
Dunn	Dn	15	Richland	Ri	80
Eau Claire	Ec	6	Rock	Ro	169
Florence	Fl	1	Rusk	Ru	21
Fond du Lac	Fd	88	St. Croix	Sc	22
Forest	Fr	2	Sauk	Sk	280
Grant	Gt	155	Sawyer	Sy	19
Green	Gr	50	Shawno	Sw	36
Green Lake	Gl	122	Sheboygan	Sb	70
Iowa	Ia	36	Taylor	Ta	7
Iron	Ir	2	Trempealeau	Tr	33
Jackson	Ja	23	Vernon	Ve	303
Jefferson	Je	242	Vilas	Vi	13
Juneau	Ju	103	Walworth	Wl	100
Kenosha	Ke	9	Washburn	Wb	17
Kewaunee	Kn	30	Washington	Wt	43
La Crosse	Lc	16	Waukesha	Wk	235
La Fayette	Lt	57	Waupaca	Wp	68
Langlade	Lg	3	Waushara	Ws	115
Lincoln	Li	14	Winnebago	Wn	104
Manitowoc	Mn	33	Wood	Wo	25

Geographical Location must be as accurate as possible. Sites correlated with permanent topographic features, i. e., bluffs, terraces, river valleys and semi-permanent ones, i. e., bridges, roads, buildings, etc., will aid an investigator in site location. Accurate site reporting eliminates possible duplication while calling attention to contiguous sites.

Description of Site. This section should contain the approximate confines of the archaeological site, descriptions of artifacts found, number and location of associated mounds, burials, and houses, if the site has been tested or excavated,

areas of artifact concentration. Additional information concerning the condition of the site when surveyed or tested and, adjacent springs, creeks, or streams, can be recorded in this section or under the section **Remarks**. If any recovered prehistoric objects readily fall into a defined prehistoric cultural context, this stage or culture should be recorded under the heading **Culture.**

References. As the greatest percentage of reported sites have been published in **The Wisconsin Archeologist,** it was decided that a convenient guide to this journal should be provided. The space beneath this sub-heading should be utilized for site reports that are not in **The Wisconsin Archeologist,** i. e., Milwaukee Public Museum publications, and any other accessible reference. Specific persons who can contribute toward a greater understanding of the site, through surface collecting activities, may be cited here or in the next section. This section, **Specimens From Site In Possession Of,** should include collection location, collector's address, and museum specimens. A landowner may not always collect artifacts, whereas previous owners, adjacent landowners, and townspeople, may have surface collected the site. Greater insight to the cultural content can be gained through knowledge of these dispersed artifacts and they, therefore, are most important in site interpretations.

The final section, **Remarks,** can include pertinent information concerning the landowners attitude towards survey and excavation, nearby water sources, if the site is recommended for excavation, and references to adjacent sites. The back of the card was left blank for further comments, maps and photographs.

SUMMARY AND CONCLUSIONS

During the past three years many suggestions were incorporated into the codification system. Other suggestions would have required complete revision of the system, i. e.. that only excavated sites be codified. This modification would have allowed for the ordering of a small percentage of sites while approximately 95% of the **known** sites, such as mounds. would have to await codification until excavation. The degree of effectiveness of the Highway and Dam Salvage survey teams, of the State Historical Society would thus be

severely limited. Sites whose locations were doubtful and those which have been destroyed by urban and industrial activities were suggested for elimination. The distribution of questionable sites can be ascertained by survey. The destruction of known sites, i. e., the Potawatomi (Mascouten) village of Walking-at-Noon, **Nawakweshkwn,** which was located during the 1830's at the present location of the main Milwaukee Public Library, is no less a reality and its reported existence can contribute to our knowledge of the temporal and spatial distribution of this tribe.

Giving a code number to a site, therefore, in no way restricts archaeological activity. Rather, we can now see the degree of prehistoric activity throughout the state. Those counties that have only a few reported sites (Fig. 4) need to be systematically surveyed and the sites reported.

The trinominal site numbering system, utilized by the Smithsonian Institution in their River Basin Surveys, is recommended for incorporation into the codification system. These alphabetically derived numbers (Wisconsin is number 47) are extremely useful for cataloging purposes. There are many counties throughout the United States that have the same two letter abbreviations.

It has been mentioned that the codification cards are on file at the Milwaukee Public Museum and the State Historical Society. It has been agreed that the anthropology department of the Milwaukee Public Museum will issue all numbers (Rowe, 1961: 137). This department will act as a "clearing house" and will allot numbers **after** the site information is recorded on two cards. This will eliminate site duplication and allow for the maintenance of numerical continuity.

There remain approximately 300 reported historic Indian sites to be codified for the State of Wisconsin. These sites will be coded separately on a card similar to the codification card but of a different color.

Acknowledgements. This work was supported by the Wisconsin Archeological Survey and the Charles E. Brown Memorial Fund. I wish to express my gratitude to Miss Ilga Cakans and Mrs. Joan Burzlaff for assistance in the typing of the codification cards.

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University of Wisconsin
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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Men of Ancient Iowa: As Revealed by Archeological Discoveries. By Marshall McKusick. The Iowa State University Press, Ames, Iowa. $6.50.

This impressive volume is a summary of the Indian occupations of Iowa as seen by McKusick. It is based on many articles and collections and has benefitted from many reports on North American Archaeology and history. The development of Iowa archaeology has been handicapped for years because for a long time the state program in archaeology was under the State Historical Society which had no adequate facilities, staff, and provided no genuine interest or support. Subsequently the State University of Iowa supported an archaeologist who was placed in a Sociology Department and had little financial or academic support within the University. It is remarkable that in spite of these bitter handicaps, but because of the dedication of many men and students a reasonable reconsctruction of Iowa prehistory can be made.

As a book producing job, this one would probably be regarded as "in" because a considerable amount of thought and work has been devoted to issuing an attractive volume. There are an unusually large number of illustrations, both drawings, half-tones, and maps. The paper for all pages is good quality tinted offset and seems appropriate enough for text and drawings but does not, I feel, accommodate well to the half-tones. Most of the drawings of Iowa artifacts are not adequate enough though they do give a general idea of the form. There is an appendix with 18 radiocarbon dates on general material from Iowa sites. For some reason, the last 12 of these are expressed with the abbreviation "A. D." following instead of preceding the date given for the sample. This is also true for the text. The abbreviation "A. D." should precede the date. The footnotes are grouped at the rear of the book on 7 pages, there is a rather full glossary on 11 pages, a bibliography of 181 titles and an index of 6 pages. There are 12 tables in which various events and cultural groups are placed in a temporal and descriptive sequence.

This summary of Iowa archaeology was presumably written to appeal to a wide audience and should be successful from this point of view. The professional archaeologist, as usual, will be less pleased for he (or she) will inevitably contrast the interpretations used by the author with those he holds himself, or those of other experienced professionals in the Upper Mississippi and Missouri Valleys. McKusick, wisely emphasizes that many current viewpoints and interpretations are subject to change and that many of those in the volumes are decidedly temporary in character.

Chapter One is entitled "Turning Points in Iowa Archaeology" which briefly mentions the Paleo-Indian, Archaic, Woodland, Mississippian, Missouri River prehistoric groups and the Indians "Biological Failure to adjust to European Diseases." Six of the seven pages or "rock drawings" are grouped with this chapter and there is no scale or mention of their size. In the middle of page 8, the second paragraph is unnecessarily long, due to a typographical error. Under the heading "Woodland Mound Builders" there is this statement, "as far as I know, there is no evidence of corn agriculture in any Midwestern site of Middle Woodland culture." This may

be a matter of the definition of "Midwestern" and "Middle Woodland." There is, however, evidence of corn agriculture at three Hopewell sites in Ohio, perhaps one in Illinois, and one in western Missouri. In this chapter we are introduced to a fair number of new interpretations which are developed in the chapters dealing in more detail with the major cultural groups.

Chapter Two is called "Archaeological Clues Tell A Story," and so, it might be added, do archaeologists. This chapter discusses the varieties of sites and other indications of prehistoric occupation and something of the way archaeologists interpret prehistoric material. In mentioning effigy mounds on p. 27 there is a suggestion that boulder effigies in western Iowa are a "substitute form" but for effigy mounds there is no elaboration of this theme. On p. 35, it is difficult to understand the statement, "While Woodland culture still flourished in eastern Iowa, the Missouri River agriculturists arrived in eastern Iowa and eventually replaced the Missouri River people in the west." For some reason, not adequately explained in this book, the author views the "Missouri River people," by which he means C. R. Keyes' Glenwood complex as having "migrated from the southern plains" (p. 12) and arriving there before there is any effective Mississippian influence in eastern Iowa.

I would question both McKusick and his source (W. G. Haag) that the Wisconsin Ice "reached its maximum stage 40,000 years ago," when the maximum ice advance took place during the last major push at about 20,000 years ago. I am also doubtful that "During most of the Pleistocene, Siberia and Alaska were connected by a very broad land mass," for I would guess that "most of the Pleistocene" did not have known glacial accumulations sufficient to have adequately lowered sea level a sufficient amount and that during long periods of the Pleistocene sea level was higher than it is now.

In the discussion of the "Fluted Point Tradition in Iowa" on p. 43, we learn that "Gravel pits would be a reasonable place to come across this early evidence," and this is reiterated on p. 49. Gravel pits in Iowa I believe would be either deposits laid down under or from glacial waters, or would be deposited as reworked material by stream action. I hope

Iowa archaeologists can find fluted points at other locations. A site might even be located in Mills County where Rowe obtained 12 examples.

Chapter Three, "Earliest Evidence of Man in Iowa" has a brief comment on the inscribed tablets found in eastern Iowa around 1880, and the peculiar "elephant" effigy platform pipes. Not only were these pipes made in Iowa in the 19th century but also I would say, a substantial number of other effigy pipes such as the frog illustrated in this book on p. 114.

"Archaic Indians Of The Prairie And Forests" is the title of Chapter Four. This is a good resume of the relatively few known sites in Iowa that belong in this time period. McKusick begins the Archaic with the introduction of small side-notched points. On pages 56-57, it is suggested that the "Logan Creek" Nebraska term, be kept as the name for an Archaic complex, which was originally called "Pony Creek" by its discoverers in western Iowa. This is fair enough, but by p. 67, Pony Creek and Logan Creek both appear.

The author's employment of "mano and metate" for hand stone and milling stone emphasizes again that the former terms ought to be restricted to the grinding of maize rather than for a variety of uses and for a wide variety of forms. The review shares McKusick's doubts about the Olin site where two chert projectile points and a copper awl have been attributed to a level of blue-grey chert in a sand quarry which was covered by thirty-five feet of later deposits. The artifacts came from under water and were in a power bucket, certainly an imprecise excavating technique.

Chapter Five is "Development of Woodland Culture" and Chapter Six is "Woodland Burial Cults." McKusick views the introduction of Early Woodland pottery and the concept of burial mounds as a "cultural veneer . . . absorbed by the local Indians . . . rather than reflecting a migration of Indians into this area" (eastern Iowa). This is reasonable. But one wonders why he accepted Chard's position that Chard had destroyed the idea of archaeologists that the burial mound concept had an Asiatic Siberian origin. Which archaeologists espoused the derivation of woodland mounds from Asia and at what time period was such a belief held? Ritchie thinks that Woodland mounds came into New York from the south

— not that Woodland mounds in the north, in general, came from the south. That was J. A. Ford's idea for many years, and he was able to persuade some archaeologists for some years.

No one knows where Early Woodland pottery began. McKusick has it diffuse westward from New York probably because of Libby's clearly erroneous date of 2500 B. C. for a site in New York. Ritchie almost never has any prehistoric complex originate in New York. Why should McKusick?

One of the most distinctive features of McKusick's interpretation of Iowa prehistory is his differentiation between burial behavioral patterns and the rest of the behavior of the people as obtained by archaeologists. He is concerned lest a specific ethnic group might have had a number of burial practices and that archaeologists would classify these practices as "two or more foci." McKusick's solution is to divorce the religious behavior of the Woodland peoples from their other behavior and name eight burial "cults" — the majority of which are "Hopewell." The "cults" are: 1. Simple Mound Burial; 2. Red Ochre Burial; 3. Stone Vault; 4. Stone Alignment; 5. Cremation; 6. Burial Pit; 7. Linear Mound; and 8. Effigy Mound. The author admits "The concept of religious cult is fairly inadequate because of the complexity of the finds. It is impossible to know which characteristics should be used to group burial practices and which are simply fortuitous." It is possible that the Woodland people would have been puzzled by this separation of their burial customs from their other activities. These "cults" are religious behavior and this spreads to societies "which were completely different in many other ways." The author also recognizes, however, that during the Middle Woodland "New ideas in religion, technology, and substistence became widely available and were adopted by one Indian group after another." The latter view would seem to be a more acceptable one for the development and differentiation of Middle Woodland societies. One thing which is clear from the presentation of Middle Woodland and "Burial Cults" is that the author has had a difficult time trying to interpret this period and he joins the rest of us in this uphappy state. His dates of 500 B. C. to A. D. 500 is too long for Hopewell and too much for Hopewellian in Iowa.

On p. 106, "The burial mounds are an expression of one dominant religious pattern. In almost every case they represent collective burial of the various members of a local band who died during year," but on p. 107 it is an "annual or semiannual burial rite." The "proxy graves" described on p. 107 are a new trait for the Red Ocher "Burial Cult." Terms such as "sitting burials," "sacrificial altar" and **"Pyrula perversa"** are adopted from the 1880's. They have a strange sound now.

In the discussion of Late Woodland burial practices a distinction is made between the Linear Mound "Cult" and the Effigy Mound "Cult." The former is a distinctive "cult" because there are linear mounds on (not along?) the Iowa, Cedar, Des Moines, and Big Sioux rivers, "and frequently occur in mound groups where effigies are absent. Thus it is clear that we are dealing with a distinct religious cult."

"Very little is known about the contents and physical structure of linears. Some of the smaller ones contain only a single burial and ceremonial stone altars indicating a limited use for personages of prominence in the tribe presumably the chief. The larger ones particularly chain linears, contain a more complex stratigraphy."

The "Effigy Mound Cult" has "great mounds in the shape of animals (which) are silent witnesses of a local, quite ancient religion having complex rituals." The ones in Iowa are regarded as peripheral to the center of the "cult" in Wisconsin. Students of Wisconsin archaeology will be interested to learn that both the "Effigy Mound Cult" and the "Linear Mound Cult" are as early as the birth of Christ in northeastern Iowa on the chart on p. 106, but on p. 120, "During Middle Woodland from 500 B. C. to 500 A. D. the effigy mound builders were flourishing and effigies were still being built in Late Woodland times." If this is true, significant revisions will have to be made in the published opinions of quite a few archaeologists. McKusick apparently relies on Parson's estimate of the length of time needed for mound soil differences to develop in order to get a bear effigy mound back to the birth of Christ for its construction. This is barely possible.

In Chapter Seven, "Warriors of the Mississippi," McKusick seems to accept much more specific and extensive Mexican influence in Mississippi cultures than many archaeologists have been able to do. For example, he labels 10 vessels on p. 137 as "Middle Mississippi decorated pottery from Arkansas shows Mexican influence." It is possible that one of these, the stirrup neck bottle, is of Mexican derivation. Another expression of this attitude is that "Mississippian societies were strongly motivated towards patterning their way of life after the religion, goals, ideals and technology which had developed in the heartland of Mexico." He believes that "The opening phase of Mississippi culture is characterized by the building of huge temple mounds made of earth" and that "Finally at least one religious cult — the Southern Death Cult — developed at the end of the Mississippi Period and spread rapidly through the Mississippi River towns and even reached beyond them into the northern plains."

The interpretation of the presence of Aztalan is, "Apparently one entire community set off to conquer the northern territories and bring civilization to the benighted savages of Wisconsin. . . . One cannot help speculating that the presence of the heavily fortified town so far from the usual geographic territory of Middle Mississippian people represented an unsuccessful effort to control or gain access to the rich northern supplies of copper."

At the Kincaid site in Illinois the wattle and daub houses were constructed because "The Mississippian people came from an area with a warmer climate than that of southern Illinois and they made certain of keeping warm in the winter." As the result of greater efficiency in food production "The expanding Middle Mississippi cultures reached St. Louis and went up the Ohio River Valley." This may be part of the reason McKusick does not see much influence of Middle Mississippi in the early development of Glenwood or Mill Creek.

The presentation in Chapter Eight of the "Oneota Conquest in Iowa" has some validity in viewpoint. The "Time Table" on p. 134 has Oneota from A. D. 1100 to 1700 but on p. 150, the table there labelled "Stratigraphic Position on Oneota Culture in Eastern and Western Iowa" places them at A. D. 1300 to 1680. McKusick wonders "were the Oneota

preceded by another settlement of Upper Mississippian cultures?" and one possibility is that "If Cambria pottery can be discovered in Iowa it may clarify the problem of Pre-Oneota."

Most archaeologists working with pottery types in the eastern United States have used a proper name and a descriptive term to characterize a distinctive segment of a ceramic complex. McKusick, however, prefers to recognize the Lane type and the Correctionville type. How he would attempt to distinguish between decorative and shape changes during the 600 (p. 134) or 380 (p. 150) years of Oneota, and between various bands of Oneota in different areas is not eleborated.

Chapter Nine discusses the Agricultural Communities in Western Iowa" and they are identified as the Glenwood Culture of the Central Plains Tradition and the Mill Creek Culture of the Middle Missouri River Tradition. The former has a time range of A. D. 1200 to 1575 and the latter from A. D. 1100 or 1200 to 1575 on the chart on p. 169. However, he believes that on the basis of unpublished radiocarbon dates of Prof. Baerreis that Mill Creek may go back to A. D. 850 and Glenwood to before A. D. 1000 as Adrian Anderson had suggested. The view is adopted here of Nebraska archaeologists that Glenwood is an eastern extension of the Acksarben of the Central Plains Tradition. But it might be suggested that "Drawkcabsaa" could be applied to this view for some archaeologists can reasonably feel that it was an expansion up the Missouri Valley of Mississippian agriculture that promoted the shift from Late Woodland in the Central Plains and western Iowa to "Nebraska" spelt backward.

It may be that some archaeologists in the Plains regard Glenwood as the result of a Caddoan movement north from the southern plains but the only one to express this idea in print that I know of is McKusick on pages 195-196. The Caddoan speaking people of the Central Plains may have come up from the Southern Plains but it is not likely such a move is represented by the societies during their agricultural period.

The Mill Creek culture of northwestern Iowa is concentrated in the Big Sioux and Little Sioux valleys and is part of the occupation of the Middle Missouri by agricultural people.

They occupied this area for a long time at least until the development of late Oneota pottery styles. One of the author's contributions to the study of Mill Creek is "I have sought to avoid the thorny problem of the taxonomic classification of Mill Creek by terming it a culture. If pressed, I would be inclined to designate it a focus. I think it is unnecessary to divide Mill Creek culture into the Big Sioux Focus and the Little Sioux Focus since I feel there are no significant differences in pottery or other artifacts." If it is really true that there are no differences it represents a remarkable example of cultural stability but perhaps the key word in the last quoted sentence is the word "I". I can remember that C. R. Keyes thought there were differences and I was convinced there were both areal and temporal differences when I studied the pottery from more than a dozen Mill Creek sites in Mt. Vernon, Iowa in 1934 or 1935.

The last chapter deals with the contact and conflict between "European and Stone Age Cultures." It presents a summary of the relations between Indians and European and American peoples from the late 17th to late in the 19th century. Even in this abbreviated form it is not a pretty picture, from the viewpoint of those "savages," that is. McKusick has cited W. T. Hagan as establishing that "The Sauk originally lived on the Upper Michigan Peninsula and the Fox tribe lived by the south shore of Lake Superior." If this is so, it has escaped Louise Phelps Kellogg, G. I. Quimby, and Warren Wittry, among other scholars interested in these "tribes."

This review has emphasized certain questionable interpretations and concepts of the prehistory of Iowa and its neighboring areas. There are others which might have been mentioned, such as the statement that the Ottawa spoke an Iroquoian language. In spite of this, the book is a contribution. It is the first summary of this area and will serve to focus attention on the importance of a continuing research program on a much larger scale in the state. One can agree with McKusick that the next interpretation of the "Men of Ancient Iowa" will be significantly different and should be a much larger volume.

James B. Griffin
University of Michigan

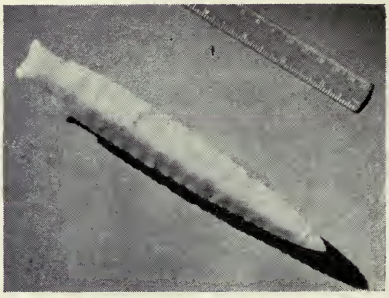
BOOKS RECEIVED

Wright, G. Ernest (Ed.). THE BIBLE AND THE ANCIENT NEAR EAST. Anchor Books, Doubleday & Co., N. Y. 1965. Price $1.95.

Adams, Robert McC. LAND BEHIND BAGDAD. University of Chicago Press, Chicago, Ill. 1965. Price $8.50.

Interesting Wisconsin Specimens

HEAD OF BIRDSTONE
Banded slate, length 2¾ inches, pop eyed type. Found in Lincoln County during road-building operations. Donated to the Milwaukee Public Museum by the Wisconsin Archeological Society.



SCOTTSBLUFF-EDEN TYPE POINT
Quartzite, length 7½ inches. Found near Bloomer, Chippewa County. The A. T. Newman Coll., Wisconsin State University, Eau Claire.

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THE ARNETT MOUND
FULTON COUNTY, ILLINOIS

Patrick J. Munson

The Arnett Mound (F°1203, ISM), a small Late Woodland burial mound, is located in Fulton County, Illinois, in the NE¼ of Section 30, Township 4 North (Isabel), Range 3 East, on the property of the late Mr. Wilbur C. Arnett. The mound lies near the top of the bluff about 500 feet northeast of the bed of Otter Creek and approximately 70 feet above the flood-plain of that stream. The valley of Otter Creek enters the Illinois River Valley slightly over two miles to the southeast.

Despite the fact that the assemblage recovered from the site is quite meager it is only with slight hesitation that the mound is assigned to the Maples Mills Focus (Cole and Deuel, 1937). The site not only contributes to our knowledge of this poorly understood complex, but also, and perhaps more importantly, it produced several traits which reinforce Bennett's (1945) position that the Maples Mills Focus shares a relationship with the Jo Daviess Focus of northwestern Illinois and, indirectly, with the Effigy Mound Culture of Wisconsin.

Unfortunately, as is the case with many of the mounds of the Late Woodland foci, a survey of the surrounding area failed to reveal the associated village site.

Description and Excavation of the Mound

In the summer of 1962 a group of Boy Scouts discovered several skeletons protruding from a vertical bank which had been cut by a bulldozer during limited gravel pit operations in the area, and this information was ultimately relayed to the Illinois State Museum. Excavations were carried out for two weeks in July of that year.

The western side of the mound had been destroyed in the above mentioned gravel pit operations, and the east side had been destroyed many years before by a road-cut, leaving only a narrow, wedge-shaped section of the mound (see Fig. 1)

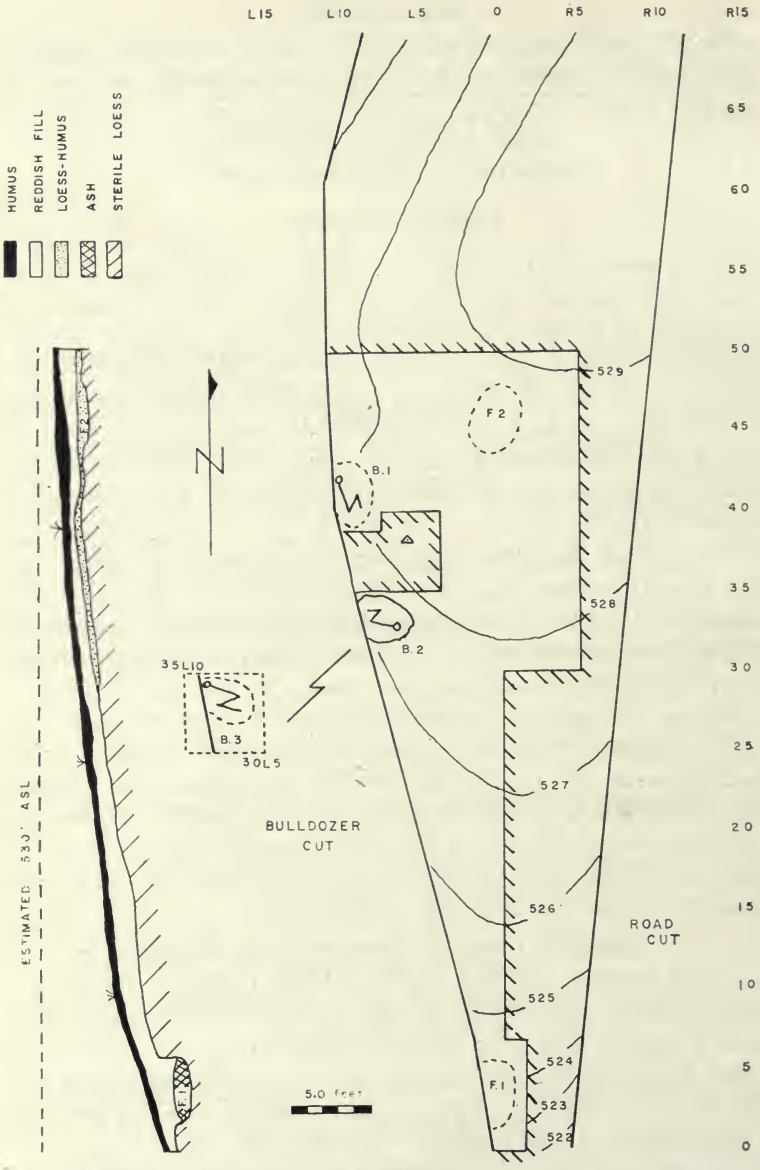

FIG. 1 — Arnett Mound. Plan and Profile.

and thus making determination of the original shape and dimensions very difficult. However, it appears to have been an oval mound about 60 feet long (NNE-SSW) and perhaps 25 feet wide. Fill had been added to a low sloping ridge, creating somewhat of a terraced effect with the foot of the mound extended well down the hill from the principal portion.

Approximately 400 square feet in the southern and central part of the mound was excavated. Because of several large trees it was felt to be impractical to extend excavations into the normal portion. The original surface of the ridge appears to have been partially scraped of humus, leaving a thin level of mixed loess and humus above the sterile yellow loess. In the area excavated, two shallow oval burial pits, a shallow oval pit of undetermined function, and a fairly deep refuse pit had been excavated through this level and into the sterile underlying loess. This surface, and the burials and pits, were then covered to a maximum depth of 1.5 feet with somewhat mottled reddish loess. Some time after this a third burial pit had been intruded through this upper surface. Since that time a dark humus level 0.3 to 0.4 feet in thickness had formed over the entire mound. Numerous small stones (mostly sandstone), several chert flakes and occasional flecks of charcoal were found in the overlying humus. The mound fill and the "old humus level" exclusive of the burial pits and features, contained only three small stones, one chert flake and a small lump of what may be red ocher.

Description of Burials

A total of three burials was discovered during excavations All were flexed on their sides, two in shallow oval subfloor pits and one in a shallow oval intrusive pit. Mussell shells were in the burial in all cases. Age, sex and pathological determinations were made largely by the late Dr. Don Dickson.

Burial No. 1: Female. Age 21-23.

The burial was loosely flexed with the hands at the face, lying on its left side and oriented NNW-SSE with the head to the NNW and facing east. The body had been placed in an inclusive subfloor basin-shaped oval pit (3.0 by 4.0 feet) which penetrated 0.2 feet into the sterile loess, the bottom of the pit being 2.0 feet below the mound surface.

A single, drilled, fresh-water pearl bead was found at the

front of the neck. An unworked valve of a mussel shell (**Actinonaias ellipsiformis**) appeared to be clasped in the left hand, although this association may have been unintentional. Numerous whole and fragmentary mussel shells were scattered through the fill immediately adjacent to the burial.

The bones were in a very good state of preservation, but the bulldozer had damaged the thoracic vertebrae and the occipital portion of the skull.

Burial No. 2: Female. Adult.

The burial was tightly flexed with the hands at the face, lying on its right side and oriented east-west with the head to the east and facing north. The body had been interred in an intrusive basin-shaped oval pit (2.5 by 3.6 feet) which penetrated the mound surface to a depth of 0.9 feet, and which was superimposed directly above the inclusive Burial No. 3.

Several fragmentary mussel shells were in the burial pit, and a number of small flat pieces of sandstone, 0.1 to 0.3 feet in diameter, were scattered immediately above the skeleton, although they did not appear to form a "cap" over the burial.

The bones were in a very poor state of preservation (due to

Figure 2

the shallow depth), and the skull was entirely missing (burrowing animal?, cultural?).

Burial No. 3: Male. Age 35-45.

The burial was loosely flexed with the hands at the knees, lying on its right side and oriented WNW-ESE with the head to the WNW and facing south (Fig. 2). The body had been placed in an inclusive subfloor basin-shaped oval pit (3.1 by 4.0 feet) which penetrated 0.3 feet into the sterile loess, the bottom of the pit being 1.7 feet below the mound surface.

No artifacts were in intentional association, but one grit-tempered, cord-marked sherd (discussed below) was in the burial pit, as were very numerous whole and fragmentary mussel shells.

The bones were in a very good state of preservation, but the bulldozer had scraped away the skull and atlas. The vertebrae exhibited a minor arthritic condition.

Description of Pits

Feature No. 1: This inclusive refuse pit, which was located at the extreme southern (downhill) edge of the mound, had been sliced vertically by the bulldozer. It was either oval or rectangular with rounded corners, with the north-south dimensions being 4.5 feet. The walls were vertical, the bottom slightly rounded, and it penetrated 1.5 feet into the sterile loess below the mound.

The lower 0.9 feet of the pit was filled with mixed ash and loess which contained 16 sherds (from two miniature vessels), six chert flakes, one "Poverty Point" object, two mussel shells, a number of animal bones (some slightly charred) and 143 carbonized hickory nut fragments. An adequate carbon sample was also obtained from this level.

In the upper portion of this ashy level, 0.4 feet above the bottom of the pit, there was a "platform" of stones—an oval area 0.9 feet wide, 1.3 feet long and 0.3 feet in thickness consisting of 31 creek pebbles (0.1 to 0.5 feet in diameter) and three bifacially pitted mano-hammerstones in a closely compacted and flat surfaced mass (Fig. 3). No evidence of firing was apparent on these stones nor on the sides and bottom of the pit, the ash matrix apparently having been redeposited from an external source.

The upper 0.6 feet of the pit contained no refuse and was filled with reddish disturbed loess indistinguishable from the mound fill which covered the pit to a depth of 1.2 feet.

Feature No. 2: This inclusive subfloor pit was fairly centrally located in the mound. It was basin-shaped and oval (3.0 by 3.9 feet) and penetrated 0.3 feet into the sterile loess, the bottom being 2.1 feet below the mound surface.

The feature contained three mussell shells and one chert flake. Except for the two mussell shells found in Feature No. 1 all other shells from the mound were found in the immediate vicinity of burials, and the fact that this feature contained shells, plus its location, shape and dimensions, strongly suggests that it was (or was intended to be) a burial pit, despite its lack of skeletal remains. Perhaps the situation is somewhat analogous to the "empty tombs" sometimes found in Hopewellian mounds.

Description of Pottery

A total of 17 sherds representing three vessels was found during excavations. None can be assigned to defined types and will therefore be described in detail.

One body sherd was found in the burial pit of Burial No. 3. The exterior surface is cord-marked with large loosely

Figure 3

twisted cords, the cord-marks being rather wide-spaced (2 mm.), and the surface had been somewhat smoothed over, apparently after the clay had become leathery, so that the spaces between the cord-marks are somewhat polished. The interior surface is poorly smoothed. The temper is small amounts of small pieces of crushed white quartz (?), and one piece of grog is apparent. The paste has a tendency to crumble and flake. The color of both surface and core is dull reddish-brown. Thickness is 8 mm. Vessel shape and dimensions are undeterminable, but the curvature indicates a fairly large vessel. The sherd shares certain similarities with both Weaver Cord-marked and Canton Ware (Fowler, 1955), but can not be crowded into either of these types. It may represent a transition between these ypes, and/or perhaps be similar to the "cruder", unclassified type found at the Maples Mills Focus Good Mounds (Cole and Deuel, 1937: 198), and/or those unclassified sherds with "coarser texture" from the Maples Focus Hagen Mounds (Baker **et al,** 1941: 21). It also shares a very close resemblance to the unclassified vessel described by Bennett (1945: 69-70) from the Jo Davies Focus Chapman Mound * No. 17, which had associated Lake Michigan Ware.

The 16 sherds from Feature No. 1 represent two miniature vessels. Both are crudely made with unevenly thinned, lumpy walls; have smoothed over cord-marked exterior surfaces and poorly smoothed interior surfaces; are temperless with fairly compact paste; and have brick-red to brown surfaces and dark gray cores. One vessel is too fragmentary to determine its shape, but the lip is interiorly beveled and the average wall thickness is 8 mm. The other is conoidal in shape, has a rounded lip and at least two (but less than four) "raised points" on the lip, a mouth diameter of 5 mm., and an average wall thickness of 4 mm.

Faunal Remains

Numerous mussell shells were found in association with the burial and animal bones and mussels were found in feature

* This mound group was later assigned to the new Chapman Focus (Bennett, 1952:119).

No. 1. Species identified by Dr. Paul W. Parmalee, Illinois State Museum zoologist, are:

Mussels	
Amblema costata (Three-ridge)	5
Lampsilis siliquoidea (Fat Mucket)	4
Ligumia subrostrata	3
Pleurobema cordatum (Small Niggerhead)	1
Strophitus rugosus (Squaw Foot)	1
Lasmigona complanata (White Heel-splitter)	1
Lasmigona costata (Fluted Shell)	1
Actinonaias carinata (Mucket)	1
Actinonaias cf. **ellipsiformis** (Ellipse)	1
Numerous unidentifiable fragments	
Vertebrates	
White-tailed Deer **(Odocoileus virginianus)**	4
Common Mole **(Scalopus aquaticus)**	6
Unidentifiable large mammal bone fragments, probably deer	21

The deer bones, which were from an immature individual (s), and the mussel shells, taken in combination with the charred hickory nut fragments found in Feature No. 1 suggest that the pit was filled (and the mound constructed) in the late summer or early fall.

Discussion

The placement of flexed burials in shallow subfloor pits is a widespread and common trait in the "northern" Late Woodland foci, being found with Weaver (Wray and MacNeish, 1961), Maples Mills (Cole and Deuel, 1937), Jo Daviess (Bennett, 1945) and Effigy Mound (Rowe, 1956). Complete or partial removal of the topsoil also shows a wide distribution.

The association of quantities of mussel shells with burials seems to be confined to the Maples Mills Focus (Cole and Deuel, 1937:197) and perhaps the Late Woodland manifestations near Quincy, Illinois (Reed and Johannes, 1957:37). However, intentional placement of mussels ("caches") were found, although not in association with burials, in the Jo Daviess Focus mounds (Bennett, 1945:73).

The "platform" of stones found in Feature No. 1 is somewhat of an enigma, which, except for the obviously unrelated

occurrence of similar features in association with Black Sand burials (Cole and Delel, 1937: 139) and the two instances of "stone cists" in Jersey Bluff mounds (Titterington, 1943:245). has its closest parallel with the "altars" and/or "cists" often found in Wisconsin Effigy Mounds (McKern, 1928:261-265).

The refuse pit (Feature No. 1) at the extreme downhill periphery of the mound is also an unusual feature. The fact that the mound fill dipped well into the pit indicates that it was dug only shortly prior to the construction of the mound, and the lack of village debris in the area argues against it being other than an associated feature. A similar pit was discovered at the downhill edge of a mound at the Berry Site, a Red Ocher-Late Woodland-Mississippian mound and cemetery complex on the Illinois River bluff about ten miles to the northeast, which contained sherds of two miniature vessels, a rim sherd of a vessel very similar to the sherd found with Burial No. 3, numerous animal bones and several acorn (?) fragments (Marion Dickson, personal communication). Inclusive subfloor refuse pits were also found at the Chapman Mound Group (Bennett, 1945), and, to draw another parallel with the Effigy Mound Culture, Wittry and Bruder (1955) found associated refuse pits directly in front of the heads of each of the four other effigy mounds excavated at the Kolterman Mound Group. Perhaps also analogous are the concentrations of partly burned or "heated" animal bones found in the Nitschke Group (McKern, 1930:456). Perhaps the occurrence of these pits with mounds is more common than the literature suggests, because the location of many of those found, being just inside or slightly beyond the edge of the mounds, would make their discovery quite unlikely by normal excavation procedures.

The function of these pits remains obscure, but delving into pure conjecture the assemblage suggests some kind of ceremonial meal, or "feast," connected with the burial of the dead. The thoroughly smashed miniature vessels in the pits (at Arnett and Berry) had been very crudely constructed and it is possible that they had been made only to be used once and then intentionally broken. The function of the platform of stone in the pit (at Arnett only) is even more obscure, but it probably was connected in some way with this ritual (assum-

ing that it did exist). There is, of course the more mundane explanation that the pit and its contents were the result of "policing" the area after meals by laborers constructing the mound. This, however, fails to give any explanation for the stone platform found in the pit.

The establishment of the precise temporal position of this site presents somewhat of a problem. Although an adequate carbon sample was collected it is felt that the assemblage is too meager and too generalized to be worthy of dating at this time. The paucity of sherds, and the uniqueness or generalized characteristics of those found, leaves much to be desired. However, the sherds collected and the combination of other traits definitely suggest a Late Woodland component, very probably in the poorly defined Maples Focus, and which shares several specific similarities with the Jo Davies Focus of northwestern Illinois and which is related, at least in some way, to the Effigy Mound Culture.

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DENTAL REMEDIES OF THE WISCONSIN INDIANS

Dr. Herbert W. Kuhm

While compiling a previous paper on the "Uses of Native Herbs by the Wisconsin Indians," a natural vocational curiosity was aroused by occasional brief and infrequent reference to their dental remedies.

Of interest was the scope of dental therapeutics, ranging from the simple use of tooth powder and laving lotions for inflamed oral tissues to poultices for facial swellings and palliatives for aching teeth.

Were this a professional treatise, such vague nomenclature as "toothache" and "stomatitis" would be most inadequate and unspecific, but in this instance one is limited perforce to these vague designations as the sources quoted made use solely of such non-definitive terms.

To any reader seeking greater detail as to the causes of the dental caries and oral lesions herein discussed, we recommend a previously published treatise, "The Dental Pathology of the Prehistoric Indians of Wisconsin," in which the writer collaborated with Drs. Alton K. Fisher and George C. Adami. It is a Milwaukee Public Museum Bulletin, Volume 19, Number 3, June, 1931.

Teething

GOLD THREAD (**Coptis trifolia**)

The roots of the **Gold Thread,** — the osauwaki'nim ("yellow thread" or "gold thread") of the Meskwaki, — yielded an astringent mouth wash that was much used for teething infants.

PANICLED DOGWOOD (**Cornus paniculata**)

Meskwaki name: maskwa'pimish ("red tree"); Potawatomi names: **nowea'kus** and **nopoakun.** This was quite an impor-

tant native medicine, and was often used upon children. When teeth were aching or one had neuralgia, tea made from panicled dogwood bark steeped in hot water was held in the mouth to alleviate this pain. This bark tea was bitter, and possessed astringent properties.

One of the teething customs of the Chippewa children was that when one of the child's first, or deciduous, teeth came out, the child was told to take the tooth in one hand and a piece of charcoal in the other. Then he was told to throw the tooth toward the east and the charcoal toward the west, saying "I want a new tooth as soon as possible."

In this connection, the common name or nickname was that by which a Chippewa was known throughout his life. It was short and frequently contained an element of humor, as in the instance of a child who was long in teething receiving the nickname "Without Teeth."

Toothache

BEAR LIVER

Writing of the medicinal practices of the Winnebago, Paul Radin speaks of **huntc p'istara** — bear liver — as being especially powerful in their estimation. It was rubbed over the body wherever in pain, and was used in the form of poultices, and for toothaches.

BLADDER MEDICINE

Dr. Radin's Winnebago informant told him of another medicine used to alleviate a toothache. The Winnebago name for it was "bladder medicine." It was made of the roots of a certain weed. These roots were boiled. No further information was obtained.

GRAY-HEADED CONEFLOWER (**Lepachys pinnata**)

The root of this plant, the **mose'wusk** of the Prairie Potawatomi, long was regarded as a cure for toothache.

PRICKLY ASH (**Zanthoxylum americanum**)

Four distinct parts of the prickly ash, — the **kawakomi'sh** of the Prairie Potawatomi, and the **shipa'skwi** of the Meskwaki, were used for native medicine, namely, the bark of the trunk, the root bark, the berries, and the leaves. The inner bark of the trunk, called **kawaconwana'ki,** was pulverized, and the resulting powder used for toothache.

SKUNK CABBAGE (**Symplocarpus foetidus**)

The Meskwaki of Wisconsin used the rootlets of this wild plant, known to them as **wewi'ini** — ("horns in the springtime") — in treating toothaches. The fine rootlets or root hairs were employed for their inherent active agent.

TOBACCO

The Indians of this continent believed that tobacco was a gift of **manido** or **manitou, Winneboujou,** who was known by several names among Algonkian tribes. It was he who gave the Indians their best remedies for treating the sick. Tobacco was regarded as a remedy for many ills and was believed to possess supernatural power.

Roger Williams, as early as 1643, said of the Naragansett: "They generally all take tobacco; they say they take tobacco against the rheume. which causeth toothache, which they are impatient of."

As to tobacco for dental purposes, the dried leaves were used, whole or powdered, and were considered effective for toothache. A portion of tobacco leaf was rolled into a small pellet and inserted into the aching tooth.

WILD GERANIUM (**Geranium maculatum**)

The root of the wild geranium was accounted a great medicine by the Meskwaki of Wisconsin. The infusion, or liquid extract obtained by steeping or soaking the roots in water, was used to stop teeth from aching. It was also a treatment for neuralgia.

Poultices

ANGELICA (**Angelica atropurpurea**)

This herb is an ingredient in the favorite poultice of the Menomini for facial pains and swellings. The angelica roots are cooked and pounded into a pulp. Then some bruised leaves of Canada wormwood — (**Artemesia canadensis**) — are peppered over this pulp. With this mass and a piece of cloth, a hot plaster is made that the Menomini claimed good for any pain in the body. They also used it to reduce local swellings.

BELLWORT (**Uvularia grandiflora**)

The Menomini used this herb to reduce swellings.

BLUE FLAG (**Iris versicolor**)

When freshly macerated, the root of this familiar herb was

used by the Meskwaki as a poultice.

CANADA WORMWOOD (**Artemesia canadensis**)

This was a very important leaf medicine of the Menomini. They used the bruised leaves of this herb with the cooked and pounded roots of angelica to make a hot poultice.

GLADE MALLOW (**Napea dioica**)

The root fibers of glade mallow are slippery like the fibers of slippery elm bark, and thus the Meskwaki name for it, **wesasak,** means "slippery," as does its Potawatomi name, **wapukun pukoka sakuk.** However the Meskwaki called the mallow root **wapaskwa.** The root fibers were boiled and used as a poultice for a swelling.

HOARY ALDER (**Alnus incana**)

The inner bark of this alder was used by the Menomini for poultices to reduce swellings. To strengthen the efficacy of the poultice the Menomini added the root bark, which was termed **watop tita'pi,** meaning "sharp."

INDIAN SPIKENARD (**Aalia racemosa**)

The Forest Potawatomi pounded the root into a pulp to be used as a hot poultice in inflammations.

LOUSEWORT (**Pedicularis canadensis**)

The early Wisconsin Indians boiled the whole plant and made a tea to reduce internal swellings, while the roots were made into a poultice for external swellings. The lousewort is the **makwama'wush** — ("bumble bee plant") — of the Meskwaki, referring to the fact that bees frequent the plant, and the **mukwamuk** and **mak'wama'wush** of the Prairie Potawatomi, meaning that the bees make honey of this plant.

POISON IVY (**Rhus toxicodendron**)

Known to the Meskwaki as **tatapa'kwi** — ("climbs trees") — and **tatapapa'kwe** — ("twisting") — to the Menomini, the root of the poison ivy made a dangerous medicine, and was used only by the most skilled medicine men. The root was pounded and made into a poultice.

SKUNK CABBAGE (**Symplocarpus foetidus**)

The leaf bases of skunk cabbage, the **wewi'imi** — ("horns of the springtime") — of the Meskwaki, furnished a poultice for the reduction of swellings.

SLIPPERY ELM (**Ulmus fulva**)

Both the Wisconsin Meskwaki and Prairie Potawatomi

used poultices of slippery elm bark on abcesses. The former called it **pukwa'nan** and the latter, **osasha'kup.**

TAMARACK (**Larix larcina**)

The bark from both trunk and root of the tamarack was used by the Menomini as a poultice while still fresh. Their name for it was **munipi'anawa** — ("it stands in the swamp").

VALERIAN (**Valeriana edulis**)

Due to its property of drawing out inflammation, this herb was much used by the Menomini as a poultice. It was ground to a pulp in a mortar, then applied to the swelling.

VIRGINIA ANEMONE (**Anemone virginiana**)

The Menomini used the root of this herb, which they called **wasai'imi'awus,** to reduce swellings.

YELLOW WATER LILY (**Nymphaea advena**)

This plant, known to the Menomini of Wisconsin as **woka'-tamo** — ("having legs to stand on") — was regarded by them as belonging to the "Underneath Spirits" and was accounted great medicine. The large, fibrous underwater stems were pulled and the so-called root dried and then pulverized. The resulting powder was used for poultices to heal swellings.

Stomatitis

ALDER

Hoary Alder (**Alnus incana**)

Smooth Alder (**Alnus rugosa**)

An infusion of the leaves and bark of these alders possess astringent properties which the Menomini held valuable in the treatment of stomatitis — (inflammation of the mouth) — the liquid being used as a mouth wash or gargle.

GOLD THREAD (**Coptis trifolia**)

The roots of gold thread yield an astringent liquid which was used as a mouth wash by the Menomini to cure oral cankers. They called it **osauwaki'nim,** meaning "yellow, or golden, thread."

SWAMP PERSICARIA (**Polygonum muhlenbergii**)

A tea extracted from the root of this plant was used for treating sores in the mouth. The Meskwaki called it **wapasi'-pin kokakia'sikeki-peskipak** — ("grows in the water") The Meskwaki used it for tea when it was "young or soft," as they expressed it.

TOBACCO

The Indians boiled an infusion of tobacco and chips of swamp oak, and applied it to an abscess. The tobacco leaves were warmed, placed on the area affected, and moistened by the infusion from time to time.

UNIDENTIFIED REMEDY

Dr. Paul Radin's Winnebago informant told him of a medicine used by the members of his tribe as a mouth wash for those troubled with sore mouths. No specific name nor identification was given other than that it "was made from the roots of a plant that has many thorns and beautiful white blossoms." The roots were scraped and the scrapings boiled down into a thick, concentrated liquor.

VEGETAL MEDICINE

A Meskwaki formula for treating sore gums and pyorrhea consisted of:

Peki'wuk – the inner bark of Smooth Alder (**Alnus rugosa**)
Wenani–a root seasoner of Ginseng **(Panax quinquefolium)**
Anoke'ik – bark of Hemlock **(Tsuga canadensis)**

WILD GERANIUM (**Geranium maculatum**)

Infusions of wild geranium roots were used by both Meskwaki and Prairie Potawatomi to cure gums and pyorrhea.

WILD PLUM (**Prunus americana**)

The bark of the root of the wild plum – **pokama'ak** (Meskwaki) or **pukoma'ia** (Prairie Potawatomi) – is an astringent medicine and was used by those tribes to cure cankers in the mouth.

Tooth Powder

WHITE CLAY

White clay, the **wapi'wiwin** of the Meskwaki, was used in a more palatable form, named **agickopagi** – (sweet earth") – as a medium for cleaning teeth. The mildly abrasive clay was rubbed over the teeth with the forefinger.

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TRAIL MARKER TREES

Robert E. Ritzenthaler

One method used by the Indians and our own pioneers to mark a trail was to sharply bend a sapling or a branch parallel to the direction of a destination. Two techniques were

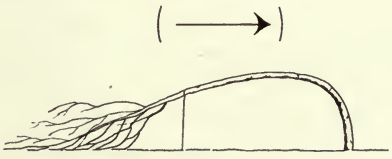

Figure 1

used: it could either be tied down (Fig. 1), or partially broken. If tied, or if the phloem layer was not badly damaged by the breaking, the sapling would grow in this new position for a while and then resume its upright growth. Thus, in many parts of the country are to be found mature trees with a horizontal jog to the trunk indicating such treatment which have come to be called "Trail Marker Trees." Jansen (**Natural History,** Vol. 45, no. 2, pp. 116-117, Feb., 1940) states, "They are most numerous in the region about Chicago, but may also be seen in various localities throughout the Mississippi Valley, in Texas, and in the Great Smoky Mountains and Pocono Mountains in the East. I have seen them in Southern Illinois, Michigan, Wisconsin, Ohio, Indiana, Kentucky, Tennessee, Missouri and Arkansas." Jansen pictures

one Wisconsin example at the Wisconsin Dells near Stand Rock.

A number of these have been reported in Wisconsin, and it is the purpose of this article to assemble known examples, with the hope that others will be reported to us by people around the State. Charles E. Brown (**Wisconsin Archeologist,** Vol. 21, No. 3, N. S., p. 50) reports a number of such trees on the grounds of Lawsonia on the north shore of Green Lake, Green Lake County, and a hickory tree standing (1940) on a Madison street corner near West Side High School, with limbs bent in four directions, marking the intersection of two trails. Mr. Charles P. Fox (**Lore,** magazine of the Milwaukee Public Museum, Vol. 1, No. 4, pp. 116-7) describes two large oak trees which appear to be fine examples and are pictured in Fig. 2. They occur on the north slope of Government Hill south of Delafield in Waukesha County, and both point in the same direction, west. The fact that they are so close together poses the problem as to why two trail markers were needed, and there is a discussion of this by the author.

Mr. Edward McCabe of Milwaukee reported and photographed two possible trail marker trees on Green Lake, Green Lake County. Fig. 3 is located on the southeast shore of the lake known as Oakwood Beach. The second, Fig. 4, is on

Figure 2

the Tichara Boy Scout camp grounds (now Camp Grow) on the southeast shore of the lake, and serves as a fence post on the south border of the camp property. In 1964 the writer photographed two other such trees on the Camp Grow grounds. One is an oak along the south fence of the camp (Fig. 5). It is an excellent example and bent to the south. Some 100 yards to the east is another oak with a double trunk, one erect, one bent to the south (Fig. 6).

In the following article in this issue Mr. Phil Sander describes a burr oak trail marker at Twin Lakes in Kenosha County.

There is, of course, some question as to how many of these deformed trees actually represent trail markers. Such

Figure 3

injury could be produced by natural causes such as lightning, or it could be the work of an animal. Ordinarily, however, such accidents cause bending at the base, rather than several feet above the base as when man deliberately bends a sapling for trail marking purposes. Accident is also more probably ruled out in the case of a series of trees occurring at intervals and all pointing in the same direction. It seems safe to say that when a tree bears a right or acute angular jog of the trunk beginning several feet above the base it is most likely a trail marker tree. It is impossible, however, to determine whether it was the work of Indian or white man, unless the tree is of sufficient age to rule out the white man.

Charles E. Brown (op. cit. p. 50) states: "Wisconsin Indians

Figure 4

also resorted to other methods of marking trails than by bending saplings or tree limbs. The trunks of trees were gashed or blazed. A stone or piece of wood was sometimes placed,

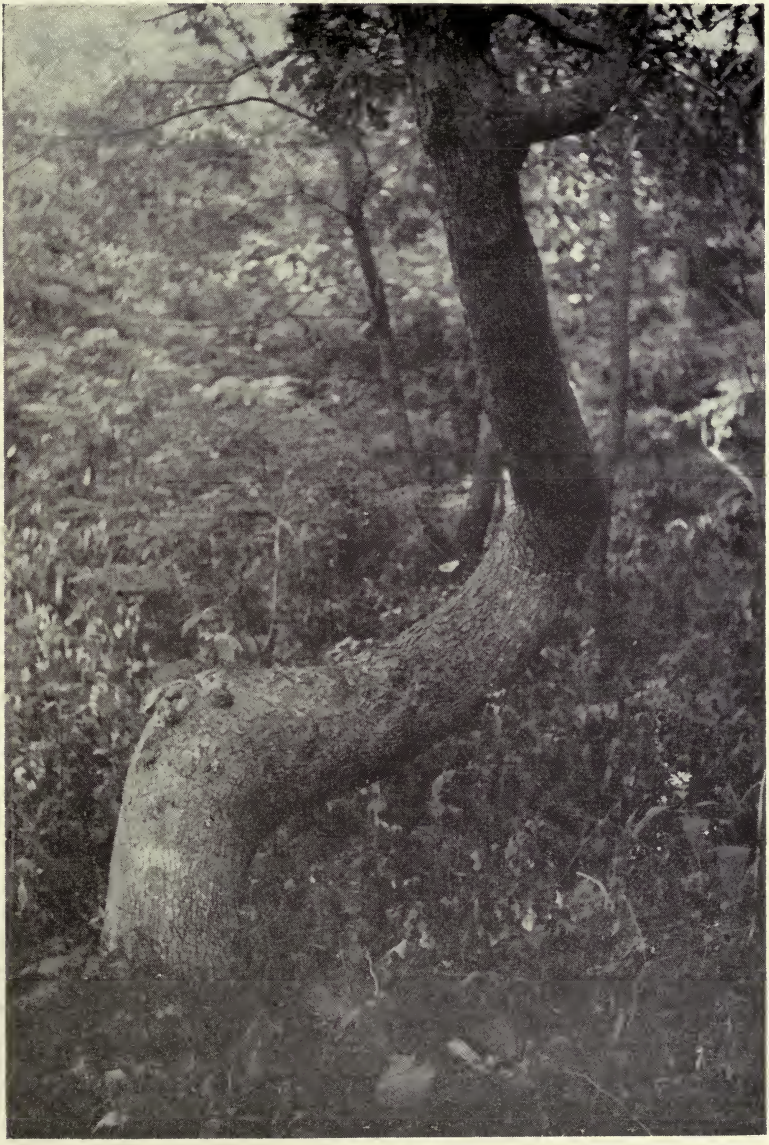

Figure 5

firmly wedged, in the crotch of a tree trunk or limb. When a trail became well worn by use there was no longer a need for trail trees or other trail signs.

An example of trail marking by a method other than the bent sapling technique is noted for Milwaukee. "In the city of Milwaukee, near the intersection of West Wells and North Thirteenth Streets, there is reported to have stood in the middle 1830's a large beech tree upon the trunk of which there was cut an Indian figure with a bow in one hand and an arrow in the other. The arrow pointed to the south toward the Menominee River and the bow to the north toward the Milwaukee River. This tree was destroyed in the improvement of this part of the city." (Dorothy Moulding Brown, "Indian Tree Myths and Legends," **Wisconsin Archeologist,** N. S., Vol. 19, No. 2.)

Figure 6

Our country was once criss-crossed with Indian foot paths. Some of these trails were used by the white man in establishing his wagon roads, a few to be later transposed into superhighways for automobiles, and some were followed by railroads.

A "TRAIL MARKER TREE" AT TWIN LAKES

Phil Sander

Trail or directional trees may soon disappear from Wisconsin's landscape. At one time these trees were quite common thruout the Midwest and those remaining are a reminder of America's first road signs. Many trail trees have been destroyed by fires and natural causes. This type of tree is seldom cut by lumbermen — because of deformed trunks. The following report is to record a known "Trail Tree" discovered in Kenosha county.

Indian people did a great deal of traveling — traversing the countryside from summer to winter campsites, and to hunting and fishing grounds. They devised a system of trail markers to assist them in arriving at their desired destination.

The most permanent markers were made from selected living trees, always hardwoods, such as oak, hickory and elm. A hardwood sapling would be selected along the trail, it was then bent in the general direction of the trail. Sometimes the tip of the sapling was buried in the ground; on other occasions it was tied down with twisted vines. As the tree grew the tip would die off, the trunk then assumed a bent condition — usually a secondary trunk formed. As the tree matured, nature patterned a living road sign that could easily be recognized, and last the life of the tree.

A trail tree still stands at Twin Lakes in Kenosha county (Fig. 1). This bent marker is located in the N. E. ¼ of Section 29 T. 1. N.— R. 19. E. Randall township. The tree is near the top of a high ridge overlooking the northeast bay of lower Twin Lakes (Lake Elizabeth).

Sighting along the bent trunk it is oriented south, and gives the direction to the land bridge separating the two lakes. Also this is the direction to an old village site and cemetery on the east side of Lake Elizabeth (**Wis. Archeolo-**

gist, Vol. 5, 1906). More closely described as S. ½ of Section 28, T. 1. N. – R. 19. E. Randall township.

The main trunk of the tree, identified as a burr oak, has a

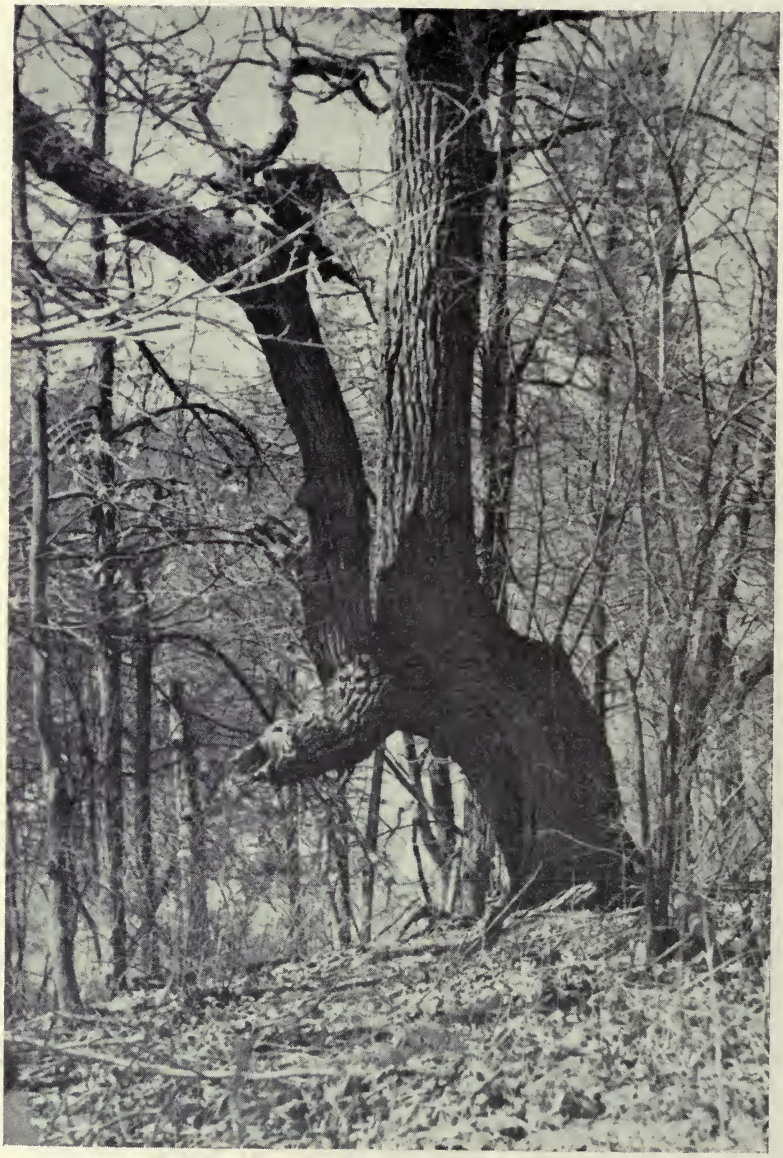

Figure 1

circumference of 88" and the secondary trunk a circumference of 64". The tree height is judged to be approximately 50 feet. No definite age could be determined, but by estimating from similar trees, the specimen could be close to 300 years old. An effort should be made to preserve this "Trail Tree" before it is cut or otherwise destroyed.

Many people passing by this tree may have noticed the odd shape, but were not aware of its past history. A historical plaque placed at the tree would be of interest, so that visitors can pause and still view the handiwork of long past.

ADDITIONAL PETROGLYPHS AT ROCHE-A-CRI STATE PARK

Wayne J. and Diane J. Hazlett

While on an archeological tour of Adams County last June, my family and I stopped at Roche-A-Cri State Park located about two miles north of Friendship, Wisconsin, on Wisconsin Highway 13. The rock carvings in the park have been published in the **Wisconsin Archeologist,** O. S. (Vol. 18, No. 2) as the "Friendship Glyphs."

We were interested in determining Roche-A-Cri's present condition, and we found a few remains of the original petroglyphs recorded in 1919; however, most of them were destroyed. Considerable flaking of the soft sandstone was evident, but of the many 1919 carvings, only a few pointed arrows and some traces of the canoe-type crescents were found.

I chalked the remaining petroglyphs so my wife, Diane, could photograph them for our records. Our two oldest children, Mark and Mike, meanwhile, climbed about as children will do. Mark, the oldest, shouted for us to come and see what the boys had found.

Up a talus slope about 75 feet from the southwest end of the bluff in a small rock shelter (Fig. 1), measuring 5 feet 8 inches high and 3 feet 2 inches wide at the entrance, they had discovered many prehistoric petroglyph remains, undoubtedly known by many, but previously unreported.

The glyphs were in good condition considering their loca-

tion in the park. Roche-A-Cri was acquired for park purposes in 1937 by the State Highway Commission, and Roche-A-Cri Bluff stands 300 feet above the adjacent plain overlooking Carter Creek, which winds its way westward to the Wisconsin River.

The better glyphs were located on the west wall of the rock shelter (Fig. 2) near the entrance. They consisted of crowfeet, arrows, lines, and some traces of unknown figures. The largest and best preserved of this group was the crowfoot in the upper lefthand corner. Its length was 20 inches. The left toe was 6 inches, and the right 7 inches long. The depth of the incising was 3/16 inches. Incised lines usually run from 1/64 to 3/16 inches deep in this group.

The second group of glyphs (Fig. 3) was located on the east wall also near the entrance. The highest was 40 inches

Figure 1

above the floor and the lowest only 16 inches. They consisted of the same types of glyphs as on the west wall except for the carving in the lower righthand corner. Because of flaking all around this glyph, I was not sure what it represented originally. All the visible lines were not chalked in so the photo (Fig. 3) does not show this glyph well, but all are shown in the drawing (Fig. 4). The remains of this carving was just 4 inches long and 2½ inches high. It was incised 1/16 inch. In this second group, the incised lines usually run from 1/64 to ⅛ inches deep.

Originally I felt that this shelter must have been filled in with drift sand in 1919 when the "Friendship Glyphs" were first reported, which would explain their absence from texts. After more detailed examinations of the walls in this shelter, however, I noted these dates: 1818, 1856, 1858, 1861, 1875,

Figure 2

1888, and 1928, when white settlers were known to have visited this site.

Between 1818 and 1856, there is a span of 38 years, and between the two most recent dates, a span of 40 years. The other five dates, however, are fairly close together, which could mean this rock shelter was filled in with sand in the early period and again 100 years later.

The prehistoric Indian carvings showed considerably more age (patina) than the historic white man's carvings. Apparently they were made at the same time as those found on the south end of the bluff. In any case, they were very similar

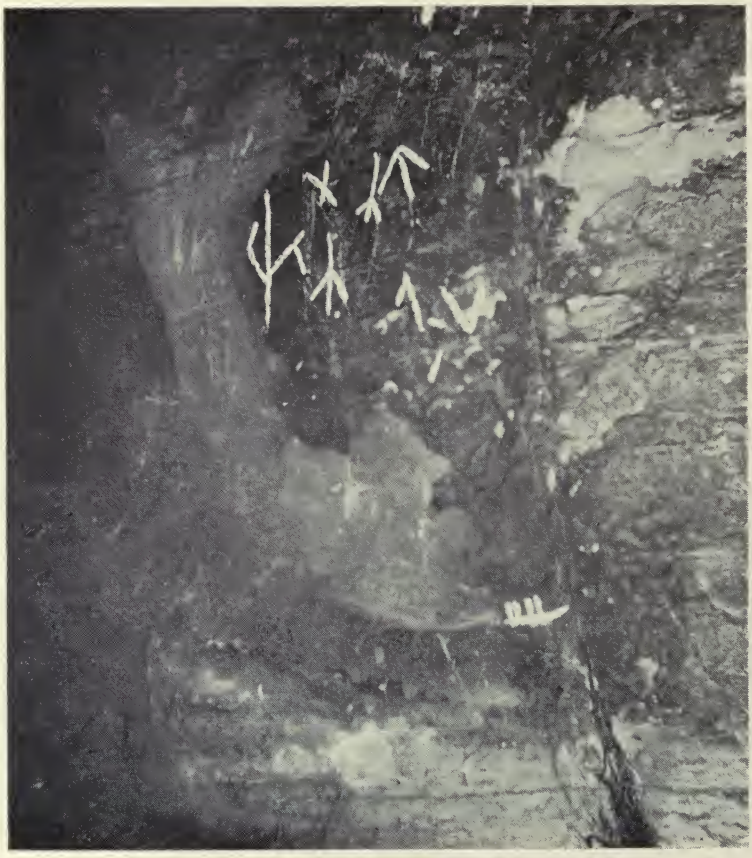

Figure 3

except for the crescents, which were not found in the rock shelter.

The ceiling of the shelter was stained black from smoke by a fire built immediately in front of the entrance. Outside the shelter, up the face of the bluff, there was considerable staining also, further evidence of this theory.

At the Gale's Bluff cave-site in LaCrosse County (Lapham, 1855) there were similar carvings, because both sites probably were in the same cultural group (Ritzenthaler, 1950), but no one ever classified them to my knowledge.

I have examined many artifacts from this area owned by old residents, and I have recovered many of my own. From these and the crowfoot, a common upper Mississippi sign, I submit the name "Upper Mississippi" as the most likely group to credit for these glyphs.

Figure 4

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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Although we have attempted to acquaint the readers of The Bookshelf with recent publications from adjoining states that are important in understanding Wisconsin prehistory, those from Illinois have been somewhat neglected. One active organization in that state has been the Illinois Archaeological Survey. Formed in 1956, their Survey has done much to systematize and coordinate the archaeological activities of the various institutions in the state. One objective has been to bring together under a single recording system all of the information about site locations in Illinois. By developing working agreements with federal and state highway departments, extensive salvage operations have been carried out on sites being destroyed through highway construction. Perhaps the most notable example of this work is that at the great site of Cahokia where they have been aided by a grant from the National Science Foundation. The Survey has also set as one of its goals the dissemination of knowledge concerning Illinois prehistory. To this end they have thus far published four Bulletins, all of them attractive numbers containing a wealth of illustrations and information.

Bulletin 1, given the title **Illinois Archaeology** and edited by Elaine A. Bluhm (who is also responsible for editing the succeeding three number) was published in 1959 and consists of a 71 page booklet with paper covers. Following an editors introduction, seven short sections are devoted to a sequential description of Illinois prehistory. Howard D. Winters describes the Paleo-Indian and Archaic periods, Melvin L. Fowler the Early Woodland period, John C. McGregor the Middle Woodland period, Moreau S. Maxwell the Late Woodland period, Joseph R. Caldwell the Mississippian period and J. Joe Bauxar the Historic period. A brief description of the

procedures of the archaeological survey by the editor concludes the volume. The chapters comprise a most useful summary of Illinois prehistory, perhaps the best source presently available for a general overview of developments in the state. The period concept, which some would prefer to have rather precise time connotations, is here used rather loosely as may be particularly seen in the designation of both Late Woodland and Mississippian period though these cultural developments are largely synchronous.

Bulletin 2, published in 1960, is 123 pages in length and has the title, **Indian Mounds and Villages in Illinois.** Like the succeeding Survey Bulletins, it is essentially a collection of articles with the stress on primary reporting of site excavations. Elaine A. Bluhm and William J. Beeson describe the excavation of three Hopewell mounds at the Dickison site in Peoria County. A series of five radiocarbon dates ranging between 310 B. C. and A. D. 58 derived from logs covering extended and bundle burials placed in subfloor tombs, place the mounds early in the span of Hopewell development. A brief report by Michael P. Hoffman on the Hiser site in Jackson County, first investigated by A. R. Kelly in 1931, identifies the site as Crab Orchard Focus but suggests some Hopewell influence. The Gamble site in Lawrence County is described by James E. Gillihan and William J. Beeson. The most extensive remains at this village site have been identified as having Middle and Late Woodland cultural characteristics for which a time range of A. D. 300 to A. D. 600 is suggested. The utility of the material for comparative and interpretative purposes is enhanced by identified faunal remains. Philip D. Young's account of the Frederick site in Schuyler County serves to identify Middle Woodland, Late Woodland and Mississippian occupations at a site destroyed by dirt removal operations. Seven burials of Missippian affiliation recovered at the Irving Thompson site in Pike County are described by Margaret L. Hoffman and this is followed by an account of the historic Grand Kickapoo village in McLean County by William B. Brigham to which extremely valuable editorial notes were added by J. Joe Bauxar. The final short article by William J. Beeson describes the salvage of a burial area in Tazewell County disturbed by highway construction but

no cultural remains were recovered.

In 1961 the third Bulletin, 187 pages in length, of the Illinois Archaeological Survey series was published and its title, **Chicago Area Archaeology,** indicates that unlike the previous numbers attention was concentrated upon a restricted locality. The initial article by Sanford H. Gates is an archaeological survey of the Du Page River drainage, primarily in the county of the same name. It is followed by a comparative article by Philip D. Young who assembles the evidence for Archaic occupation in the Chicago area. An interesting article by Jane MacRae describes excavations in her back yard in Barrington, Illinois. 107 artifacts were recovered, including five grooved axes and 3 celts. Mrs MacRae, in view of the fact that few broken pieces were found as well as only a small amount of chips and no rejects, considers the possibility that the artifacts recovered represent a discarded collection. While the answer is a probable one, rather than conclusively established, the paper illustrates the complexity of the problems to be faced in interpreting prehistoric remains. Philip D. Young, David J. Wenner, Jr. and Elaine Bluhm report on two burial sites in Lake County, which on the basis of the use of red ochre and associated sandal-shaped gorgets, cylindrical sheet copper beads and crinoid stem beads are thought to fall somewhere between 1500 and 500 B. C. A skeleton from the Doetsch site, one of the burial areas just discussed, is described by Georg K. Neumann as conforming to his Lenid variety, typical of the Boreal Archaic peoples of the Great Lakes area. This is followed by a brief survey of Old Copper artifacts from Chicago by George I. Quimby. Several more extensive site description reports follow the articles previously mentioned. One by Gloria J. Fenner on the Bowmanville site located on a sandy ridge adjacent to the North Branch of the Chicago River, while based on a surface collection, is from a sector now completely absorbed by city expansion and is likely to be our only knowledge of the prehistoric occupants of this area. Since the pottery types range from Early Woodland through Middle Woodland to Late Woodland and Upper Mississipian, and lithic implements also suggest Archaic occupation, long continuity of occupation is reflected. Howard D. Wnters re-

ports on the excavation of eight mounds in Will county excavated by George Langford in 1929. The mounds, rich in artifacts and some exotic traits, such as five burials with articulated snake vertebrae across their waists (Mound 3) — a trait previously noted at Utica Mound 11 in Illinois where two burials had snakes coiled around the necks, are regarded as Hopewellian of the Havana tradition. New materials from the Anker site, assigned to the Blue Island culture and located on the Little Calumet River are described by Elaine A. Bluhm. A notable feature of the work was the recovery of the remains of a long oval house, 53 feet by 13 feet in dimensons. It is suggested that the structure was dome-shaped with the roof supported by a row of center posts. The rich material recovered from the site shows relationships to Orr Focus materials in Iowa and Wisconsin and is characterized by an abundance of aboriginal trade goods particularly in marine shell objects. At the Oak Forest site in Cook County, reported by Elaine Bluhm and Gloria J. Fenner, ceramics very similar to the Anker site were discovered, and a total of eight oval houses ranging in length from 25 to 47 feet and distributed in a random fashion on a ridge, were located. On the basis of a single fragmentary iron object found in a pit, the site is assigned to the early historic period at about 1680. The final paper in the volume by Emily J. Blasingham is concerned with the historic tribes of the Chicago area between about 1650 and 1816.

The final Bulletin (No. 4) to be discussed was published in 1963 and bears the title, **Reports on Illinois Prehistory: I.** While the Bulletin contains four articles, 105 of a total of 130 pages of text and illustrations are devoted to a study of the Plum Island site in LaSalle County by Gloria J. Fenner. This site, located near Starved Rock, was excavated over thirty years ago and though frequently mentioned in reports, has only now been thoroughly described. Although five components are present at the site (Archaic, Early Woodland, Middle Woodland and Upper Mississippi), the latter is quantitatively the largest and also of greatest interest. The Upper Mississippian unit is a part of the complex in Illinois known as the Fisher Focus, Plum Island being most similar to the Healy component at the Zimmerman site. Miss Fenner

interprets the material as representing the occupation by the Kaskaskia, perhaps in the sixteenth century. It is suggested that this late occupation represents a time during which the economy shifted and became increasingly oriented toward bison hunting, ultimately culminating in the winter hunt - summer agriculture cycle found during historic times. The final articles in the Bulletin include a discussion of Illinois pipes by Harold P. Jensen, Jr., a study of Paleo-points from Vermilion County by John Henry and Al Nichols and a description of simple stamped pottery from the Wabash valley by Denzil Stephens.

The Bulletins described above contain a weath of material that not only clarifies Illinois Archaeology but is of direct relevance to Wisconsin prehistory. Both ceramic and non-ceramic artifacts are described in detail and provide the basis through which linkages between the regions may be established. A notable feature of the major site descriptions included is the careful attention paid to the identification of faunal remains which will aid in the reconstruction of environmental conditions during the period of occupation. The Illinois Archaeological Survey is to be congratulated on the excellent quality of its publication series. In giving credit, however, it should be noted that the contributions are not only those of staff members and students at the various institutions in the state, but also by interested amateurs. Those interested in adding the Bulletins to their libraries will be pleased by he reasonable prices, No. 1 — $1.00; No. 2 — $1.00; No. 3 — $2.00; No. 4 — $2.00. They may be obtained by writing to the Illinois Archaeological Survey office, 137 Davenport Hall, University of Illinois, Urbana.

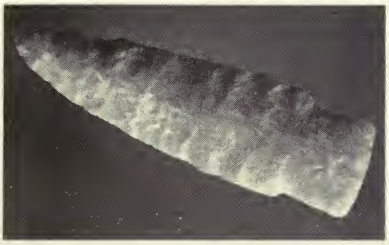
DAVID A. BAERREIS,
University of Wisconsin

BOOKS RECEIVED:

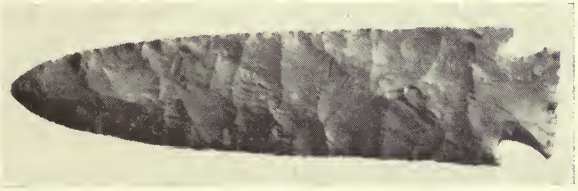
Deetz, James. THE DYNAMICS OF STYLISTIC CHANGE IN ARIKARA CERAMICS. Illinois Studies in Anthropology No. 4. Urbana, 1965. Price $2.50.

Martin, Lawrence. THE PHYSICAL GEOGRAPHY OF WISCONSIN. University of Wisconsin Press, Madison, 1965. Price $7.50 cloth, $3.00 paper.

Interesting Wisconsin Specimens



PALEO-INDIAN POINT OF THE SCOTTSBLUFF-EDEN TYPE
Quartzite, length 4 inches. Found near Kiel, Calumet County. James Bindrich collection.



CHERT POINT

Length 6¾ inches. Shows fine workmanship and secondary flaking. Culture: unknown. Surface find by R. Zuehl in S. E. quarter of section 24, Sullivan tnshp., Jefferson County. William Barrett collection, Milwaukee.

The Wisconsin Archeological Society notes with deep regret the death of Dr. Edgar G. Bruder on July 14, 1965. Dr. Bruder was a long time member and past president of the Society. In 1955 he was awarded our highest honor, the Lapham Research Medal, for his contributions in the field of Wisconsin archeology, and particularly for his mound survey work in Dodge County. Dr. Bruder will be missed by his many friends within the Society and throughout the State.

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Milwaukee, Wisconsin

Incorporated, 1906

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THE WISCONSIN ARCHEOLOGIST

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CLIMATIC EPISODES AND THE DATING OF THE MISSISSIPPIAN CULTURES

David A. Baerreis and Reid A. Bryson

The purpose of this communication is twofold. First, we wish to report on a series of new radiocarbon dates for prehistoric sites in Wisconsin, Iowa and Missouri. Secondly, we wish to discuss briefly the broader context and objectives of our dating program. Although the analysis of the cultural materials recovered in the field excavations is not yet complete and the full context of the dated samples will be discussed in subsequent reports, we feel there is some merit in prompt reporting of dates and in placing on record the initial hypothesis now being tested by our current research program. The radiocarbon dates were obtained by Dr. Margaret Bender in the Radiocarbon Dating Laboratory of the Center for Climatic Research at the University of Wisconsin. Financial support was provided by the Atmospheric Sciences Division, National Science Foundation Grant GP-444 and Grant GS-433 from the Social Sciences Division of the same institution.

One research area of the Center for Climatic Research at the University of Wisconsin is the study of climatic conditions of the past. A useful approach is through the ecological and environmental data provided by archaeological excavations. Not only do such investigations provide information that permits added refinement and precision in the description of past climatic periods, but in turn the application of knowledge of past climatic periods to the archaeological sequence provides a means of establishing one of the important factors leading to cultural change. But if we infer that cultural developments are at least in part related to climatic change, then using the cultural evidence to deduce the timing and nature of the climatic change can lead to circular reasoning. No

other line of evidence may be available, but if independent data can be adduced to verify the occurrence of a climatic change, then hypotheses of cultural-climatic relations are considerably strengthened. Fortunately, in the case of the last two millenia or so there are several independent lines of evidence which give us some insight into the nature of the climatic episodes which have occurred and their timing. Another fortunate circumstance is that while pre-contact cultural developments in various non-contiguous parts of the New World are generally independent of each other, climatic changes the world over are not independent, and thus world-wide evidence with regard to the climate may be brought to bear on the interpretation of a fairly local cultural-environmental problem.

Perhaps it would be useful at this point to digress and consider one contrasting aspect of geophysical verus cultural developments in time. Climate and the circulation of the atmosphere are globally interrelated, and macroclimatic changes cannot occur in only one part of the globe. Furthermore, it appears that climatic changes do not come about by slow, gradual change, but rather by apparently discrete "jumps" from one circulation regime to another. Thus climatic episodes of a particular circulation character have fairly well defined beginnings and ends and these occur quite rapidly and nearly simultaneously the world over. By contrast purely cultural events, such as the adoption of a farming economy, must spread by diffusion from centers (or regions) of innovation. This spread, before the present era of rapid communication, must have been relatively slow compared to the propagation of climatic change. We might hope then to identify in archaeological materials finite ubiquitous time horizons of geophysical origin as well as time-transgressive horizons of cultural origin. The occurrence of the geophysical (climatic) event may accelerate or slow down the rate of cultural change, however.

In our field investigations we have attempted to concentrate upon cultures whose geographic locations are near the margins of biomes, the largest definable community of interaction of plant and animal species, since this location should make them particularly sensitive to climatic fluctuations. Ob-

viously as the climate fluctuates, one would expect the ecotone (the zone of transition between two or more diverse communities) to shift its location and thus be reflected in changes in plant and animal species associated with a cultural sequence in a given locality. Archaeological work in such an ecotone has an added advantage because of the operation of a mechanism designated the **edge effect** by the ecologist (Odum, 1960: 278-281). An ecotonal community often contains many of the plant and animal species of both of the adjoining community areas and hence is a region of increasing variety and density of plant and animal life. They would obviously be an especially favorable habitat for human occupation and one might also expect a higher population density for man and consequently a more adequate archaeological record. With the species of two biomes already present, a climatic shift which brings a region more completely into the climate appropriate on one of these biomes should be readily reflected in changing proportions of species. Further factors leading to the selection of particular research areas have been the existence of evidence suggesting climatic change and the desire to test our methodology in late archaeological cultures where extrapolations from present climatic regimes provide a sound basis for estimating the magnitude and character of the climatic changes. [1]

The Mississippian cultures, particularly Middle Mississippi and Oneota, are one major prehistoric group meeting the criteria we have outlined. James B. Griffin has recently published a series of papers concerned with the archaeological implications of late climatic changes which deal in part with these peoples. His thesis, as it pertains to the Mississippian

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[1] Archaeological field work directed toward problems of this character were initiated in the summer of 1963 at Mill Creek sites in northwest Iowa located at the base of the prairie peninsula. A report on this work is currently in preparation but some elaboration on the nature of the approach may be found in a paper discussing problems of climatic interpretation in the Southern Plains region (Baerreis and Bryson, 1965). Field work directed toward Mississippian problems was carried out in the summer of 1964 under NSF Grant GS-433 with Amy E. Henning, Dale R. Henning and G. Richard Peske in charge of different field units operating in Iowa, Missouri and Wisconsin respectively.

cultures, is briefly summarized below, the primary source being a paper presented at a conference held at the New York Academy of Sciences (1961). Griffin states that "beginning a few hundred years before A. D. 1000 there developed in the East St. Louis area an agricultural, sedentary culture type that is a regional expression of an increasing emphasis on agriculture known in much of the eastern area as the Mississippi culture. The Old Village complex of Mississippi culture in the St. Louis area exerted a strong influence to the north and northwest, up the Illinois, Mississippi, and the Missouri valleys" (**ibid,** p. 710). He indicates that it is certain there was a strong movement of people into southern and western Wisconsin by about A. D. 700 to 800 and into eastern Minnesota of this predominantly agricultural people. Support for the time of this movement is given by citing the radiocarbon date (M-1037) of A. D. 750 + − 150 derived from a house wall post at Aztalan. Griffin sees the period of A. D. 700 to 1200 as one of warmer climate in the Upper Mississippi valley and Great Lakes area which allowed the settled agricultural populations to move northward into locations near the present border of effective corn agriculture. The Oneota cultures of the Upper Mississippi area, regarded as a descendant of the Old Village tradition, are thought to have shifted away from a marked dependence on agriculture to a heavier emphasis on hunting which accompanies a marked drop in cultural level. This period of gradual decline is seen as occurring in the A. D. 1300 to 1650 time period which falls within the time span of A. D. 1200 to 1700 when in the Great Lakes and northeast it was interpreted as relatively cooler with a shorter growing season and perhaps also somewhat moister (**ibid.,** 710-712).

Aztalan Dates

It is obvious in this postulated cultural sequence that the time placement of Aztalan is of considerable importance. As we have indicated, Griffin cites M-1037 (A. D. 750 + − 150) as supporting his interpretations of the time relations involved in the development and spread of the Mississippian cultures. However, two other radiocarbon dates obtained for this site by the University of Michigan Laboratory are not in agreement with this interpretation. The first date obtained for Aztalan (M-642) was from charcoal at a depth of 2.3 feet

in the northwest pyramidal mound and has an age of A. D. 1630 + − 200 (Crane and Griffin, 1959: 179). More recently a date (M-1214) was obtained on charcoal from a pit in the northeast quadrangle of the village area, the age being A. D. 1370 + − 100 (Crane and Griffin, 1964: 3). Robert Ritzenthaler has placed himself on record as regarding the earliest (A. D. 750) and latest (A. D. 1630) dates as not being satisfactory while the A. D. 1370 date was the most "agreeable" 1961, 1963). His preference was for A. D. 1200 as a more logical time at which to place the occupation. William Hurley (1964) has presented arguments for the acceptance of all three of the Aztalan dates.

The excavations of the Wisconsin Historical Society in the summer of 1964 under the supervision of Joan E. Freeman and Jay Brandon provided an opportunity to obtain additional samples for dating purposes to clarify this critical dating problem. Four samples, all charcoal (as are all of the new dates reported in this paper), have now been run with the following results:

WIS-63	Feature 1 (64)	A. D. 1130 + − 80
WIS-68	Feature 17a (64)	A. D. 1100 + − 80
WIS-73	Feature 49 (64)	A. D 1130 + − 80
WIS-74	Feature 42 (64)	A. D. 1220 + − 80

While the detailed characteristics of the features and associated artifacts will be presented by the excavators in conjunction with their report on the season's work at the site, they indicate that the associated ceramics are of the characteristic Woodland and Mississippian types commonly found at Aztalan.

The four new Aztalan dates from the Wisconsin laboratory form a remarkably tight cluster and we can not doubt that they are a true reflection of the age of occupation of this portion of the site. Furthermore, they do occupy a median position in relation to the widely ranging Michigan dates. However, establishing a rather tight range of dates for this portion of the site does not in itself finally settle the question of the duration of the occupation of the site and the time of its initial settlement. Since these questions are directly relevant to the broader interests we have mentioned, we shall briefly discuss them.

One factor to be considered in reference to the Aztalan dates is that they represent samples derived from a very limited sector of the site. The locations may be most conveniently discussed in reference to the index map dividing the site into sections which appears in the comprehensive report by S. A. Barrett (1933: Map 2). The dated features excavated by the Wisconsin Historical Society party in 1964 are all in Unit IV with the exception of Feature 49 which is in Unit V. Two of the earlier dates (M-1037 and M-1214) are also in Unit IV while the late date (M-642) from the northwest pyramidal mound is in Unit XII. It might thus be argued that the samples are not randomly distributed over the full extent of the site to give an adequate picture of the entire span of occupation. While such a position has merit, the location of the major group of samples is a strategic one. It does represent an area of intensive occupation which can be seen as being within nearly all of the concentric stockade lines. If these are regarded as successive stages of growth of occupation, Unit IV might well have been occupied when the site was established and continued in use through the terminal stages of occupation. But even if this is the case it does not provide assurance that the sample of six dates is adequately spread over the full range of occupation. The context of date M-1214 which Hurley (1964) has described in admirable detail was one in which the refuse pit was cut through by a wall trench and hence is earlier than this structure. This would tend to suggest, perhaps, a reasonably early time position but the date of A. D. 1370 + — 100 does not confirm a very early position.

Can we, as Hurley (**op. cit.**) suggests, accept all of the dates? Hurley based his argument on the fact that the excavations at Cahokia seem to reveal a long span of occupation ranging from the ninth to the sixteenth century and that the dates from Aztalan do not fall outside of that span. This line of argument, however, is not acceptable. Cahokia is a much larger population center and the material remains recovered in the many excavations in that region reveal a very considerable amount of culture change that is not duplicated at Aztalan. It would be well not to base an estimate of the dura-

tion of occupation of Aztalan on radiocarbon dates alone but rather to consider the cultural evidence of internal change within the village and in the material possessions of its inhabitants. In an earlier paper (Baerreis and Freeman, 1958) which explored one aspect of this problem by making a detailed attribute analysis of the Aztalan Collared type we were unable to find marked differences in frequency associated with specific areas within the site that would imply culture change over an extended time period. Since the study cited dealt with only a small portion of the total range of material culture, it would be well to carry out such an analysis with a wider range of material. However at the present time it seems that the evidence for internal change is minimal and a span of occupation of nearly 900 years is not acceptable. Both the very early date (A. D. 750) and the very late date (A. D. 1630) lack support from the new dates. A possible range of occupation from A. D. 1100 to A. D. 1300 seems reasonable on the basis of present evidence.

Aztalan Dating and Oneota

While we may find some disagreement yet remaining about the precise time of the initiation of the occupation at Aztalan, it seems probable that it is substantially later than the A. D. 700 to 800 period which Griffin has indicated. Thus we may suggest that the migration of peoples from the major population center of Cahokia took place not near the beginning of the occupation of that center, which Melvin L. Fowler on the basis of a large series of new radiocarbon dates estimates only began about A. D. 800 (Fowler, 1963: 57), but rather after some time had elapsed. A lapse of several hundred years would, in any event, seem more reasonable since we must allow time for sufficient population increase to have taken place to permit the budding off of new colonies or alternatively postulate some marked environmental change or cultural situation that would force out the numerous occupants of the Cahokia region. No evidence has as yet been pre-

sented indicating a decline in population at Cahokia during its early span of occupation so that population increases may be the more reasonable factor producing migrations to the northern frontier. In view of these seeming late migrations of Middle Mississippi to the Wisconsin region, it is no longer possible to incorporate Aztalan in any sequence of an evolution of Oneota from a Middle Mississippi ancestor. It should be recalled that such a development was not postulated by W. C. McKern who made the early analytic studies of this culture in the Wisconsin region. He suggested that the Oneota peoples were fairly recent arrivals in Wisconsin at the time of the white man's entry (McKern, 1942: 161) and, indeed, also suggested that the Middle Mississippi peoples may have been even more recent arrivals than the Oneota group. This interpretation is now being born out by radiocarbon dating though, of course, some Oneota sites are later than Aztalan.

The recent work of Robert L. Hall at the Carcajou site on Lake Koshkonong (Hall, 1962) has done much to clarify this situation. Occupation of this site, perhaps intermittent in character, spans several stages in the development of the Oneota tradition. Two of the three radiocarbon dates available for this site (M-786 – A. D. 900 + – 250 and M-785 – A. D. 1020 + – 250) place the "Emergent Oneota horizon" as it is represented at the Carcajou Component of the Koshkonong Focus as roughly about A. D. 1000 (Hall, 1962: 109). Hall stresses that "the earliest datable Mississippi complex at Carcajou Point can only be called Upper Mississippi with some recognizable Middle Mississippi traits, particularly in ceramics and domestic architecture. Its immediate antecedent was an already attenuated Middle Mississippi culture probably not unlike classic Oneota cultures in its socio-economic pattern" (ibid: 94). Thus while we may still derive Oneota from Middle Mississippi, it is evident that we must postulate an early divergence of Oneota from a common Mississippian ancestor.

New Oneota Dates

We have briefly cited some of the evidence which indicates that the Oneota culture can not be regarded as simply the result of the rapid spread of a culture whose inception is barely prehistoric, but that to the contrary considerable time depth

is involved. Thus if our objective of relating the cultural events represented by the history of this people to climatic episodes is to be achieved, it is obvious that a substantial series of radiocarbon dates must be obtained that will permit the necessary precise correlations. Samples collected at several locations are presently being run and we can now report on the results of the first of these.

W. C. McKern (1945) described the Orr Focus in Wisconsin on the basis of three components, Shrake-Gillies, Midway and White II. These components are located along the Mississippi River in Trempealeau. La Crosse and Vernon Counties respectively. Limited excavations were conducted at the Midway site by Guy Gibbon during the summer of 1964 and from one charcoal sample an age determination (WIS-61) of A. D. 1420 + − 70 has been made. Such a late time placement is to be expected. While no trade goods are reported by McKern from Orr Focus sites in Wisconsin they do occur in related sites in Iowa and form one of the bases for postulating that the manifestation represents the ancestors of the Iowa.

Further excavations in Wisconsin were also conducted by G. Richard Peske at the Lasley's Point village site on the eastern shore of Lake Winneconne in Winnebago County. This site was extensively tested by A. P. Kannenberg, Curator of Archeology at the Oskosh Public Museum and his associates, and while he presented no analysis of the remains McKern felt there was no doubt that the complex should be assigned to the Lake Winnebago Focus (McKern, 1945: 126, 163). The site, however, does present some distinctive features such as the presence of negative painted pottery (Bullock, 1942a: 41) which would appear to suggest Middle Mississippian contacts. One area of the site is characterized by the presence of a series of "mounds" of which some 55 have been listed in print (Bullock, 1942b: 35-36). Many of these mounds are discrete refuse accumulations and the dates presently available are from three of these middens. Two dates were obtained from Mound 2: WIS-57 − A. D. 1270 + − 80 is from unit 1550-5090, Level 4, and WIS-47 − A. D. 1170 + − 80 is from Feature 2, located in Level 4 of the same unit.

one than the radiocarbon dates indicate. While the radiocarbon dates will eventually establish the earliest time hor- From Mound 28a one date, WIS-50 – A. D. 990 + – 70, was obtained from sample found in Test Pit 16, Levels 2 and 3. The final date is from Mound E, WIS-62 – A. D. 1170 + – 80, the sample being from Level 2 of Test Pit 15. Thus present evidence would place this portion of the Lasley's Point occupation as about A. D 1000 to 1250 which seems to be in agreement with the time of Middle Mississippian expansion northward. The earlier dates for this complex as opposed to the Midway site, would also seem to confirm Hall's interpretation (1962: 107) of the resemblances of some Lasley's Point materials to his Developmental Oneota horizon.

Excavations were also conducted on Oneota sites in Western Iowa and the materials are presently being analyzed by Amy E. Henning. Three dates were obtained from the Dixon site (13WD8), a site on the Little Sioux River south of Anthon. Dale R. Henning (1961: 17) describes the site as covering at least 80 acres and indicates that no trade goods indicative of white contact have been found. Three of the dates presently available are associated with a house excavated in the 1964 season. WIS-54, from Feature 1 adjacent to the south wall of the house, provides a date of A. D. 930 + – 80. A second date, WIS-53 from an ash lens exterior to the south wall of the house is A. D. 1100 + – 80. The third date. WIS-59 is from Feature 13 a storage pit within the house, but its age, A. D. 1600 + – 80 seems late. One additional date from the site, WIS-56, was obtained from Pit No. 3, one of a series of storage pits now being eroded by the river and gives an age of A. D. 1130 + – 80. Two dates are also available for one of the Correctionville sites (13WD7) which, like other important Oneota sites of this locality, is in process of being destroyed by gravel removal operations. Samples of charcoal were collected from two trash pits during the summer of 1963. The sample from Trash Pit No. 1 gave a date of A. D. 1660 + – 90 (WIS-35) while that from Trash Pit No. 3 was A. D. 1540 + – 80 (WIS-71).

It is evident that a very considerable time range is involved in dating the Mississippian cultures, in fact an even greater

izon involved, perhaps around A. D. 800, the continuity of some Oneota sites into the historic horizon of documented by the presence of European trade goods, carries the story well into the eighteenth century.

Climatic Episodes

Several climatic episodes can be identified which cover the time period being considered and which were sufficiently different to affect the character of the biomes exploited by the various cultures. These events can be identified from a number of lines of evidence and from many parts of the world. It is careful sifting and winnowing of this evidence and its interpretation in terms of climate that is the business of the historical climatologist,, and he has a difficult job indeed for the evidence is very diverse in its character and often equivocal in its meaning. Nevertheless, a pattern is beginning to emerge.

Such slow-responding climatic indicators as ocean temperatures and glacier positions indicate that the post-glacial climate was "different" than the present in the period up to about 500 B. C. ("milder"), generally "more severe" until perhaps A. D. 400, "milder" again until about A. D. 1300, then "more severe", especially in the interval from about A. D. 1600 to the late 19th century. The "amelioration" of the climate since that time is well-documented in instrumental records (Hubbs and Roden, 1964; Heusser, 1961; Bryson and Julian, 1963; Mitchell, 1961; etc.). Descriptive terms in the preceding are put in quotes because the data, **per se**, do not allow one to differentiate clearly between "cold", and "cold and wet", or "cold, wet and cloudy". The actual character of the climatic episodes must be reconstructed from other evidence, bearing in mind that when it is colder in one region the atmospheric mechanics may require that it be warmer in another.

Other faster-responding indicators such as pollen, tree-rings, bog stratigraphy, and direct written references make it possible to refine our account of the climatic episodes (Lamb, 1961; Byrson and Julian, **op. cit.**). We find that there were three intervals of somewhat differing character that made up the "milder" period between A. D. 400 and the onset of the

so-called "little ice age" of A. D. 1600-1900. The middle one of these, from about A. D. 900 to 1250 has been called the "little climatic optimum" because of its apparent similarity in climatic character to the "climatic optimum" prior to 1500 B. C. (Bryson et al., 1965). Indeed, it is quite certain that even these episodes of several centuries duration were not entirely uniform but were composed of several intervals of differing character and length right down to the day by day weather variations. Nevertheless it appears that we can identify certain intervals of sufficiently long duration to be biotically and culturally significant, and sufficiently homogeneous to be referred to as distinct climatic episodes.

The total character of these episodes is not known, their termini are not all precisely fixed, and their character varies regionally. Descriptive names like "hypsithermal" or "little ice age" have no meaning in the Amazon basin, for example. Nor should we say "the climatic episode of the 16th through 19th centuries," for it did not correspond exactly with this calendar interval and change brought about by new evidence leads to confusion. It would seem wiser to assign arbitrary, nondescriptive names to the episodes [2]. Such nomenclature has been given to the earlier portions of the post-glacial, and we have chosen this lead in filling out the sequence which starts with Pre-Boreal, Boreal, Atlantic, Sub-Boreal, Sub-Atlantic. Generally speaking, the literature specifies a beginning for the Sub-Atlantic but is indefinite about its end.

In the preceding paragraphs a "more severe" period starting about 500 - 600 B. C. was cited. This may be identified with the Sub-Atlantic. Immediately one must point out that while "more severe" might describe this episode, it is definitely not universally applicable. Hubbs (op. cit.) finds that coastal waters of western Mexico and Southern California were colder than at present; Woodbury (1961) suggests that Arizona and New Mexico were warmer; Brooks (1949) summarizes evidence that the Mediterranean area was wetter; and we find that the initiation of upland muskeg growth in central Canada

[2] There is ample precedent for the assignment of nondescriptive names in geologic usage, e. g. Cambrian, Orodovician, Silurian, etc.

around 430 B. C. (WIS-1) suggests that the Sub-Atlantic was wet there (Bender, et al., 1965). It is the glacial advances and associated eustatic Roman Emergence that justify in any way the term "more severe" though it would appear that the glacial advances reflect primarily greater accumulation rather than appreciably lower temperatures. The lower coastal temperatures may be explained by more intense upwelling.

Apparently the Sub-Atlantic ended about A. D. 300-400, though the end seems less definite than the beginning. The following episode was characterized by amelioration of the climate in Scandia [3], glacial retreat, the post-Roman transgressions, and accelerated erosion in the Southwestern mountains. Following the geological practice of naming a period for the type locality for exposure of its sediments, we shall call this climatic episode the Scandic.

Following the Scandic episode, about A. D. 800-900 there began one of the most interesting of post-Glacial periods. Just as the Sub-Atlantic might be called, alternately, the Graeco-Roman, Han, Hopewell or Dorset period, so the Neo-Atlantic (A. D. 800-1250) might be called the Viking, Western Thule, Anasazi, or Middle Mississippian. We have chosen to call it the Neo-Atlantic because of its similarity to the Atlantic (Lamb, 1963). Drift ice was greatly reduced in the Arctic and the Canadian Arctic Archipelego was apparently free of permanent sea ice. Inland Canada was warmer and the boreal forest advanced northward into what is now tundra. European summers were remarkably warm and dry, but the circulation pattern of well developed subtropical anticyclones associated with such conditions brings an influx of moist tropical air into the Great Plains of North America to provide abundant summer rain — in turn supporting the extension of corn farming by the Upper Republican people. The Southwest was warmer, glaciers disappeared from the United States portion of the Rocky Mountains, and extensive gullying began in the valleys of the Colorado Plateau and the Rio Grande area, apparently in response to increased summer rainfall. (Woodbury, **op. cit.**; Bryson and Julian, **op. cit.**). During this

[3] Scandia is here used to denote the far north Atlantic—Greenland, Iceland, and Scandinavia proper.

time the Anasazi corn farmers, using the summer rains, expanded to their maximum extent, and more Mexican faunal elements entered the southwestern United States.

A rather sharp change in the atmospheric circulation appears to have taken place around A. D. 1250. Written records from Europe indicate that the pattern of dry summers and mild winters that had characterized Western Europe during the Neo-Atlantic gave way in a few decades to a pattern of wet, cool summers in coastal Europe and dry summers and cold winters in eastern Europe (Lamb, 1963). This is a pattern recognized today as "Westwetter" or predominantly zonal flow. Farms on heavy clay soil areas of England and Denmark were abandoned, and ice conditions worsened in the sub-Arctic. The closing of the waterways in the Canadian Arctic Archipelago terminated whaling by the Western Thule people.

Zonal flow produces damp, cool summers in coastal Europe, but has a quite different effect in interior North America. Pacific air streams across the western Cordillera, descending across the Plains. Summer rains diminish in the Southwest and the northern Plains, while Oklahoma and Texas receive more summer rain, and winter precipitation increases in the Rockies and Colorado Plateau. During this interval, which we will call the Pacific climate episode, the Upper Republican corn farming ceased on the plains, either the people or their culture shifting southward into Oklahoma (Baerreis and Bryson, 1965), and a catastrophic reduction of the area occupied by the Anasazi occurred (Woodbury, **op. cit.**). The plains economy extended eastward with an apparent expansion of the prairie peninsula (Bryson and Baerreis, 1964), perhaps "amputating" the northern outposts of the Middle Mississippi peoples in Wisconsin and Minnesota.

After about A. D. 1450 the climate seems to have reverted in part to the character of Neo-Atlantic times, but a definite change to stronger circulation and a new climatic episode occurred about A. D. 1550. Apparently the westerlies and polar storm tracks shifted southward and intensified, carrying wet, cloudy summers deep into Europe. This more intense circulation leads to dynamic instability of the zonal flow and the

development of blocking anticyclones over western Europe in winter. That such occurred is amply documented (Lamb, 1963; Bryson and Julian, 1963). Dominant southeast winds in winter were recorded in western Europe by Tycho Brahe, with the associated cold weather brought from the interior. Glaciers advanced in the Alps and in Iceland, and once again were found in the U. S. Rockies as far south as New Mexico. Severe weather should have prevailed in the Canadian Arctic, and certainly did prevail in Iceland. It is likely that the growing season was shortened, and that the summers were cooler in the upper Midwest.

This period, previously referred to as the Little Ice Age, we shall call the Neo-Boreal. It ended with the recent climatic amelioration which started about 1880. If we can assume that the character of the Neo-Boreal was relatively uniform except for a break in the first half of the eighteenth century (and this appears to be the case) we can get an idea of its character from the instrumental records of the early nineteenth century. Fort Winnebago, at Portage, Wisconsin, experienced a much higher frequency of north winds in the summers of the 1830's than at present, and a July rainfall maximum rather than the June and September peaks of the present normal. Since the present double peak is associated with the northward and southward passage of the polar front, the data suggest that the front only moved as far north as central Wisconsin in July during the Neo-Boreal. This is several hundred miles south of the present normal July position, but is quite consistent with Lamb's (1963:145) estimate that the main storm track was shifted southward by 4-5° latitude during the early 1800's and that a deep, cold trough existed near 60-70° W. longitude.

Unfortunately for the North American cultural historian, the Neo-Boreal began just at the time of European contact, obscuring the relative roles of cultural and climatic impacts on the lifeways of the Indian. It is an intriguing possibility that deteriorating climatic conditions making an agricultural economy precarious may have been more influential in producing a shift to a fur trading economy than the magnet of European trade goods.

Final Comments

For the reasons presented earlier we have proposed a new set of names for the late prehistoric climatic episodes and on the basis of comparative evidence suggested some modifications in the temporal boundaries. These new boundaries appear to us to make a more coherent picture with the new radiocarbon dates for the Mississippian cultural developments. We anticipate that the completion of some of the studies presently in process will further refine the picture.

Little direct evidence is available from the Wisconsin-Great Lakes region to support the interpretation of the character of the late climatic episodes. Griffin (1960: 824) has cited the discovery of the remains of the prairie vole (**Microtus ochrogaster**) in a humus zone of a sand dune in Leelanau County, Michigan, in the northeastern part of the Lower Peninsula at 45° north latitude. A radiocarbon date of the humus zone at A. D. 1220 + — 250, he suggests, implies that a sufficient moderation of climate had taken place to extend its range some 200 miles to the north for this prairie mouse is now limited in its distribution to extreme southwestern Michigan. This northward expansion is in agreement with the northward advance of the boreal forest during the Neo-Atlantic episode. It is similarly in agreement with the conclusion reached by R. A. Yarnell in his recent survey of plant remains in the Upper Great Lakes region" . .. . that the spread of agriculture in the Upper Lakes region was near its northernmost aboriginal limit by A. D. 1100 to 1200" (1964: 14). New radiocarbon dates obtained for Minnesota archaeological sites while not entirely consistent can be interpreted to lend further support to the timing of the cultural sequences our new dates indicate (Johnson, 1964).

The initial studies of James B. Griffin and his associates at the University of Michigan have opened an important research area in the interrelation of climatic and cultural events in the Great Lakes area. We hope that our contributions will lead to refinement of his suggested pattern of climatic-cultural interrelation and clarify somewhat the nature of the climatic environment in Mississippian times.

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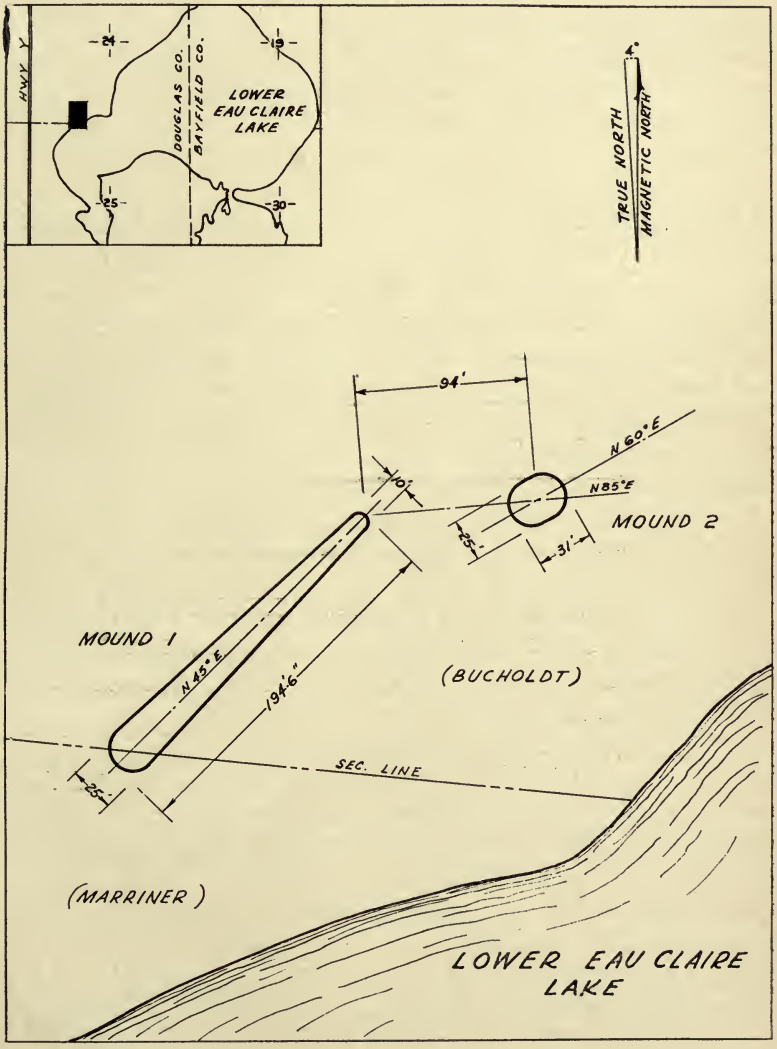
TWO LOWER EAU CLAIRE LAKE MOUNDS

Mary Kathleen Overly

Eleven miles east of the town of Gordon in Douglas County of northwestern Wisconsin, there is a chain of lakes, the Eau Claire lakes. One of the main bodies of water in the chain is the lower Eau Claire Lake on whose shore is located



what may have been originally a considerable group of mounds. Although the group presently consists of only two mounds, a reliable source [1] recalls that there were more but that these probably were destroyed during the construction of a large summer house at the site.

The two remaining earth works are located on the wooded banks at an elevation of about forty feet above the lake level. Their specific location is in the SE ¼ of the SW ¼ of Section 24, Township 44N, Range 10W (see inset map) and on the property of Caroline Bucholdt. One mound extends slightly into Section 25 in the land owned by Robert Marriner.

Immediately to the west of the mounds is an old field overgrown with grasses and spotted with a few small fir trees. The patterns of color variation in the vegetation in the field suggest that there may have been some aboriginal activity here as well. For example, only a few feet west of Mound 1 there are many circular areas about fifteen feet in diameter in which the grass is of a different shade of green compared with that elsewhere in the field. On the mounds themselves are some fir trees ranging in size up to a foot in diameter plus some smaller oaks and poplars.

Mound 1 is of the tapering linear type and its wide end, measuring along the section line, is two hundred and sixty-five feet from the shore line of the lake. Its axis is N. 45° E and it tapers from a twenty-five foot maximum width to ten feet. The overall length of this mound is one hundred and ninety-four feet and six inches; at the large end it is three feet four inches high while at the other it measures eleven and one-half inches in height.

Mound 2 is ninety-four feet away from the north end of Mound 1 at N 85° E. This is a short linear mound of the same maximum width as Mound 1: twenty-four feet. Its length is thirty-one feet and its maximum height two feet four inches. Its axis has the bearing of N. 60° E. Both mounds are in a very good state of preservation; let us hope that they

[1] The source here is Mr. Andrew Lord, a native and long-time resident of the Solon Springs - Gordon area and himself a descendant of the original Indians of the region. It was with his invaluable aid that I was able to locate this and other groups of mounds.

do not suffer the same fate that befell the others in the group.

There are reports by residents in the area of other mound groups in the Eau Claire Lake region: one on the west side of Section 13 to the north of the group described here and another at the northernmost tip of Middle Eau Claire Lake. Undoubtedly there are still more in existence around the lakes. If at all possible they should be located and surveyed so that we would at least have a descriptive record of them. Lake property in this area is in increasingly greater demand and with the subdivision of property and the construction of lake cottages, what mounds that remain now are sure to be destroyed.

COPPER ARTIFACTS FROM WESTERN ONTARIO

Wilfrid Jury

In the Museum of Indian Archaeology at the University of Western Ontario, London. there is an assemblage of native copper tools and ornaments that have been found over the past thirty years in the southwestern portion of the Province of Ontario, chiefly in or near the two principal river valleys – the Thames and the Ausable which flow westward to Lake St. Clair and Lake Huron respectively. One piece was located near the shore of Lake Erie; another on the Grand River; and one group to the north, on the shores of Lake Huron. Several of the pieces were accidental finds by farmers and in most cases a fairly adequate description of the find was obtained.

Worked copper is comparatively rare in the area. Specimens with origin west of Lake Ontario in the Royal Ontario Museum, Toronto, have been recorded by Popham and Emerson (1954, p. 16), and a few items are in the possession of private collectors. Copper fishhooks are the exception, several having been reported by commercial fishermen on Lake Huron.

Copper occurs occasionally in glacial drift in the area, but the source of the metal has been accepted to be the copper outcrop on Isle Royale or the Keweenaw Peninsula in the State of Michigan. A distinct grain parallels the long axis of

the artifacts and, in most of the specimens, there are specks of silver flaking.

The copper that has been found in sand is generally faintly stained or mottled with green; two surface finds in high clay land are free from coloration; and the objects that were recovered from gravel areas bear a rather dense green patina.

In the early seventeenth century southwestern Ontario was occupied by the Neutral Indians, an Iroquoian people who were preceded by people of Woodland and Archaic cultures. Although the late W. J. Wintemberg has reported worked copper on and near Neutral and early Neutral sites (Wintemberg, 1931, pp. 10-11; 1939, p. 79), it has been my experience to examine only one habitation site in Neutral territory that yielded copper. This was in Lambton County about five miles from Lake Huron on a peninsula of a former lake (now a celery bed) whose outlet emptied into Lake Huron near the present mouth of the Ausable River. The site was of considerable age and there were only vestigial remains of carbon and ash, flint chips, and at depths of 26 and 34 inches, a strip of native copper and a copper nugget. In three instances copper has been associated with human skeletal remains; in one instance with stone artifacts.

On a series of sand dunes that borders the Thames River for several miles through Lobo and Caradoc Townships, Middlesex County, small pieces of cord-marked pottery are picked up from time to time. It was in 1926 that I found green-stained human bone fragments distributed over the slope of one of these wind-eroded hills together with copper beads, a copper disc, and a copper leaf-shaped projectile point. Since that time, on the same sand ridge, I have found four spheroidal beads and, on one occasion, a concentration of seventeen tubular beads (Plate I, Nos. 2-5).

Testing in the area has brought no results. The field had been cultivated over a period of some fifty to sixty years before wind and water erosion had denuded it of top-soil, and the shifting sands of the previous twenty years had completely dissipated any occupational debris or soil stain that may have been present. Only fragmental bone remained, but sufficient to establish that it had been a burial.

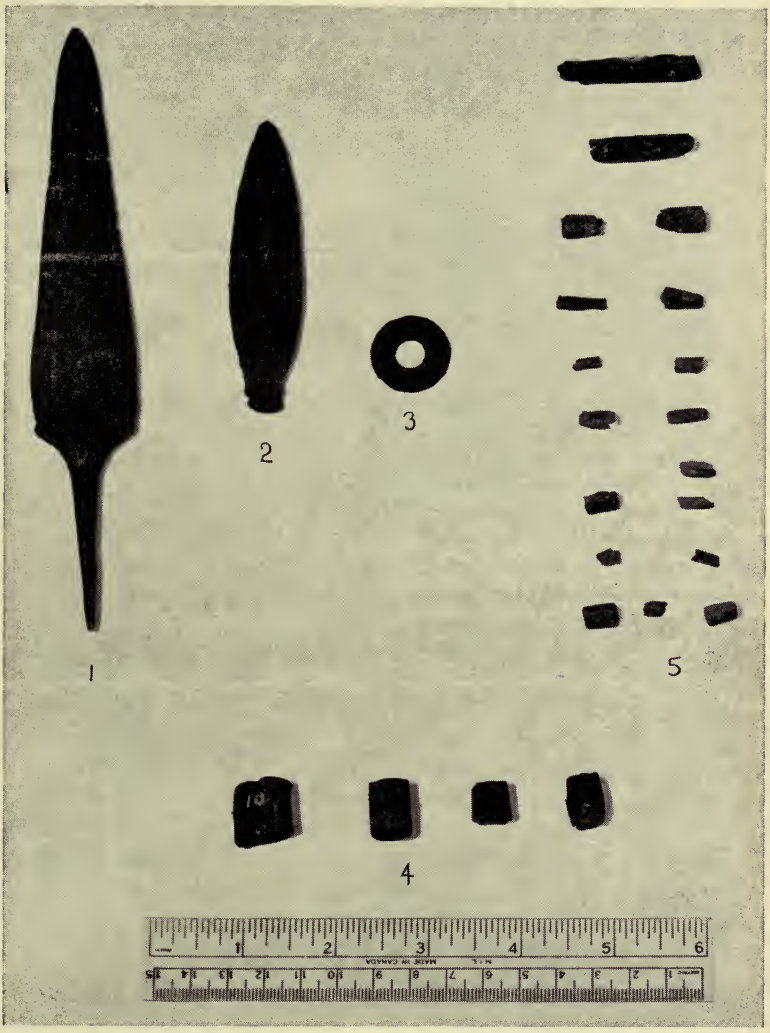


PLATE I. ISOLATED FIND, BURIAL — THAMES RIVER

1. **Spear point, with rat-tail tang. Angular shoulders with greatest thickness of blade at centre, thinning to sharp edges. Smooth surface, slight green mottling.**
   Blade, length: 5" **Tang, length: 2¼"**
   Width at base: 1⅛"
   Thickness at centre: 3/16"
2. **Projectile point, lanceolate shape with notched stem, median ridge on both surfaces. Smooth, with faint mottling of green.**
   Point, length: 3" **Stem, length: ⅜"**
   greatest width: ⅞" **width: 7/16"**

3. Disc, circular, or ring, cut from extremely thin, flat sheet copper. Edges have been ground. Smooth surfaces.
Diameter: 15/16th" Width of ring: 9/16"

4. Beads, four, of rolled copper; three are circular, one is plano-convex. Fusion of the metal has been incomplete in the two larger beads. Surfaces are smooth.
Circular beads,
length: ⅜", ⅝", 7/16"
diameter: ⅜", 7/16", ⅜"
Plano-convex bead,
length: 11/16"
width: ⅝"

5. Beads, seventeen, tubular. Considerable erosion in some instances.
Lengths: ⅛" to 1-9/16" Diameters: ⅛" to 5/16"

In the same series of sand hills near Chatham, 50 miles west, a burial with copper has been reported but no details are known.

To the east, near the village of Dorchester, on a farm that borders the south branch of the Thames, a copper projectile point and a heavy copper celt were recovered from a sandy knoll that from time to time yields flint arrow points and stone tools (Plate II, Nos. 2, 3).

Similar sand dunes extend along the banks of Kingman's Creek, a tributary of the Thames River that flows from the south to a juncture near the village of Delaware. There, an Old Copper rat-tail tanged spear point (Plate I, No. 1) was picked up near Delaware, and a heavy copper celt, excellent for barking trees, was found in a corn field near the village of Lambeth (Plate II, No. 2). A third Old Copper find near Dingman's Creek was a projectile point with serrated stem (Plate II, No. 6).

Two copper objects came from high clay land to the north of the Thames River — a celt with medial V-shaped notched poll from the banks of the Oxbow Creek, and a highly polished nugget found on the surface of a cultivated field near Kilworth (Plate III, Nos. 3, 4).

The Ausable River meanders for many miles through Lambton County, sometimes paralleling the shores of Lake Huron. Toward its mouth at Port Franks, it flows through an area of drift-sand hills and deep blowouts, interspersed with marshy lowlands. Periodically it cuts new channels and causes serious floods. To divert the course of the river at flood seasons a "cut" has been made some two miles from the lake.

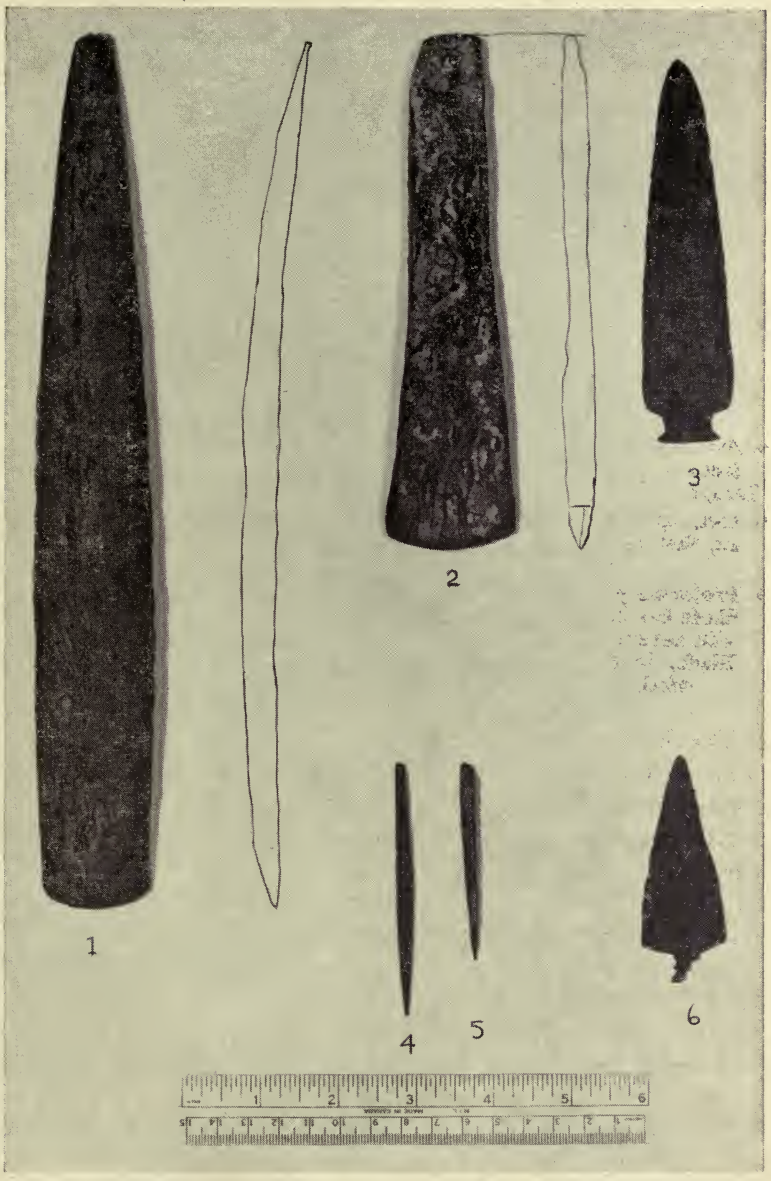


PLATE II. ISOLATED FINDS—THAMES RIVER

1. Celt, or woodworking tool with slight curvature. The bit is convex in shape. There is a tapering in width and thickness to the poll which is battered as though used as an axe. Deep, rough graining

extends lengthwise on all surfaces. Slight green mottling.
Length: 11¾" Length of tapering
Width at Centre: 1½" to bit: 2"
at bit: 1⅜" to poll: 4"
at poll: ½" Weight: 1 lb., 15 oz.
Depth at centre: ½"

2. Celt, rectangular in transverse section with expanding bit that is convex in shape. Tapers slightly in width and depth to poll. Rough surface with longitudinal ridges. Considerable green patination.
Length: 7" Width at center: 1"
Depth at centre: ⅜" at bit: 1-11/16"
at poll: ¾"

3. Spear point, side notched with expanding base. Edges bevelled on both surfaces. Excellent workmanship, smooth surfaces. Slight green mottling.
Blade, length: 5¼" bevelling: 3/16"
width at base: 1⅛" Stem. length: ⅜"
thickness: ⅛" width of base: ⅞"

4. Awl, rectangular in section; single sharp point, oval base. surfaces smooth.
Length: 3⅜" Width at centre: 3/16" Thickness at centre: ⅛"

5. Awl, square in section; single sharp point, square base with notching that indicates a binding or hafting. Smooth, green mottling.
Length: 2⅝" Width: 3/16"

6. Projectile point, with serrated stem. Teeth on one side are broken. Blade has bevelling at edges on both surfaces. Surfaces are smooth with several cuts made by a sharp instrument.
Blade, length. 2⅝" bevelling: ⅛"
width at base: 1⅛" Stem, length: 7/16"

The Ausable empties into Lake Huron near an outcrop of chert at Ipperwash, where archeological investigations have proven that an extensive flint industry was carried on by prehistoric peoples (Jury, 1949). Near its mouth is the Burley Site, for which a date of 2619 + — 220 years was obtained by the Institute of Nuclear Studies, Chicago, and where flint chippings were discovered with Vinette I pottery (Jury, 1952).

About two miles beyond the Burley Site, on a shady slope that rises above the "cut", a group of Boy Scouts recently discovered a red ochre burial with mortuary gifts comprised of 5 flint projectile points, 3 flint T-shape drills, a shell pendant, 4 clam shells, an antler point, 3 bone darts, copper, and 41 galena cubes. The copper consisted of a small flat celt, 3 awls, and 2 tubular beads (Plate IV). A more detailed description of this find is under preparation.

In 1931 two awls with square and blunt bases were picked up on a sandy field above the Ausable near the village of Syl-

van, and reference has been made to copper related to a camp site on the shores of a former lake in this district (Plate II, Nos. 4, 5; Plate III, Nos. 1, 3).

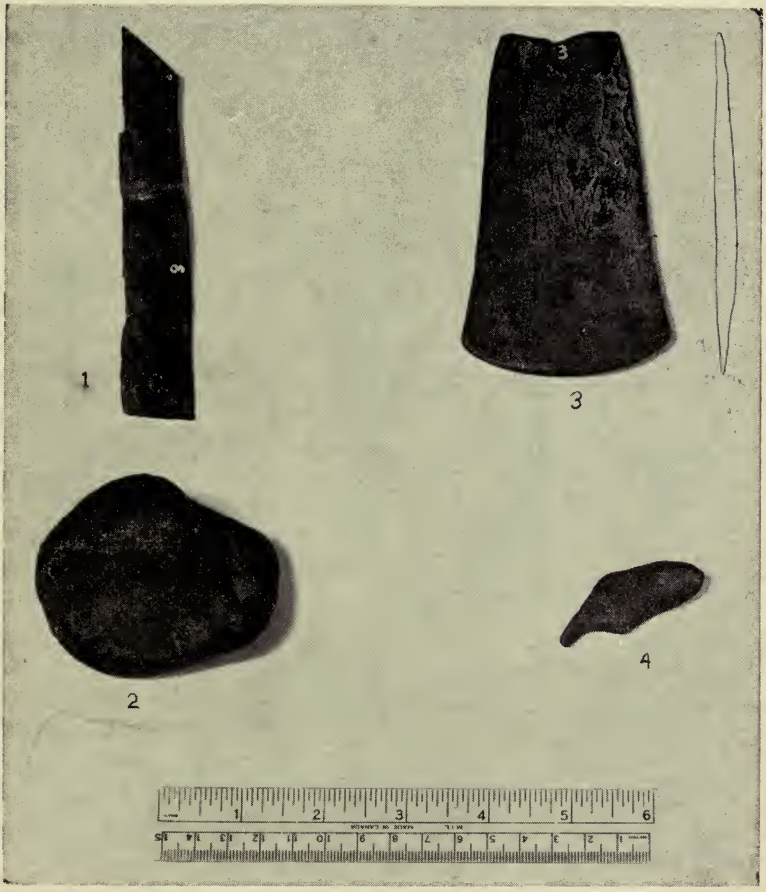


PLATE III. THAMES RIVES—AUSABLE RIVER

1. **Copper strip irregularly cut, edges not ground, with numerous marks made by a sharp instrument.**
   Length: 5½" Width: ⅜"
2. **Copper nugget of irregular shape. Roughly 3" x 2½".**
3. **Celt, rectangular in transverse section with expanding bit ovate in shape. There is a slight tapering and narrowing to poll. Medial V-shape notch in poll. Fine graining extends lengthwise. Green mottling.**

Length: 4 - 9/16" at poll: 1½"
Width at centre: Depth at centre: ¼"
at bit: 2⅝" Notch: depth ⅛", width ¼"

4. Copper nugget, irregular in shape, resembling a leaf. Highly polished surfaces as though much carried.
Length: 2" Width: 1¾" Thickness: ¼"

Only two of the copper objects from the southernmost part of the province were not related to the Thames or Ausable waterways. A unique gorget with two holes was found in a field above the shore of Lake Erie near Eagle, and a spatulate-shape celt with grooved shank on the banks of the Grand River near the city of Brantford (Plate V).

The third burial with copper occurred in Bruce County on the shores of Lake Huron near Stokes Bay about 120 miles north of the Ausable, where boys at play in a gravel pit discovered human bones, stained green, intermixed with three crescent-shaped copper ornaments (one with two perforations), a copper celt, 3 awls, an unidentifiable copper object, and 17 thick rolled beads (Plate VI). The crescents are very thin and could be only ornamental in use. Although only one is perforated, a similarity in shape and size, and the fact that the three were tightly compressed, as indicated by the pattern of the patina, suggest that they were worn in a similar manner, probably on the breast. No description of the find could be obtained except that "the skeleton was in a sitting position." The copper was donated to the University Museum by a resident of the area who purchased it from the boys.

Some 50 miles south of Stokes Bay near Lake Huron is the Donaldson Site, reported by J. V. Wright of the National Museum of Canada, where a few objects of native copper were recovered, including a celt that resembles the celt from the burial. This site, Wright relates to the Burley Site, and to the nearby Inverhuron Site excavated by Walter Kenyon of the Royal Ontario Museum. He assigns them to the Saugeen Focus representing an early stage of the Middle Woodland Period. The estimated age of the Donaldson Site is 500 B. C. (Kenyon, 1959; Wright and Anderson, 1963).

In the Museum's total collection of copper objects, utilitarian implements greatly outnumber ornamental pieces which, with

PLATE IV. PORT FRANKS RED OCHRE BURIAL

1. Beads, two, of rolled thin strips of sheet copper.
   Length: ⅜" and 5/16" Diameter: 3/16" and ⅛"

2. Celt, rectangular in transverse section, expanding slightly to bit which was probably straight although considerably eroded. Rough surfaces. Green.
   Width, at centre: 1-1/16" Length: 2⅝"
   at bit: 1¼" Depth at centre: ⅜"
   at poll: ⅞"

3. Awl, deeply eroded, was probably square in section. Tapers to one sharp point.
   Length: 3-9/16" Width: 3/16"

4. Awl, square, tapers more sharply to one end which may have been hafted.
Length: 4 - 3/16" Width: 3/16"
5. Awl, square, tapering to one sharp point. Considerable erosion toward opposite point.
Length: 5" Width: 3/16"

one exception, have been associated with burials. The gorget, found near Lake Erie, could be included in Flaskerd's definition that: "Gorgets and pendants are usually flat and may be irregular, square, round, rectangular or triangular in shape. They have one or more holes or a notch on either side." (Flaskerd, 1940. p. 48.) The apparent notches in this gorget are believed to be caused by imperfections in the material. A description of a smaller, circular gorget with two perforations is included in "Lake Superior Copper and the Indians." (Griffin, Ed. 1961, p. 97.)

The disc (Plate VIII, No. 6) is more unusual. There is no mention of discs in "The Old Copped Culture of Wisconsin," edited by Ritzenthaler in 1957, nor do they appear among the traits of Adena and Hopewell in Webb and Snow. * Griffin and Quimby describe thirteen discs from the McCollum site in northern Ontario, none of them, however, of the "ring" pattern of the Lobo disc. (Griffin, 1957. p. 97-8.)

Most of the utilitarian pieces appear similar to examples illustrated and described in works on the Old Copper and later cultures that include copper as a diagnostic trait. The spear point from the Lobo burial resembles rat-tail points illustrated by Quimby (1960, Fig. 25) and corresponds to Wittry's Group I, C.

The three projectile points are stemmed. The two triangular points have bevelled edges; one, a serrated stem. The leaf-shaped point has marks of hafting on the stem. They are well-fashioned, thin, with smooth surfaces, extremely sharp, and are free from acid erosion. They are probably of Woodland tradition rather than any earlier complex.

Two celts, rectangular in transverse section, with flat surfaces, and expanding to excurvate or ovate cutting edge celts or axes classified as Hopewell types by Quimby (1957, Fig.

* Editor's note: Similar discs occur in Upper Mississippi sites in Wisconsin.

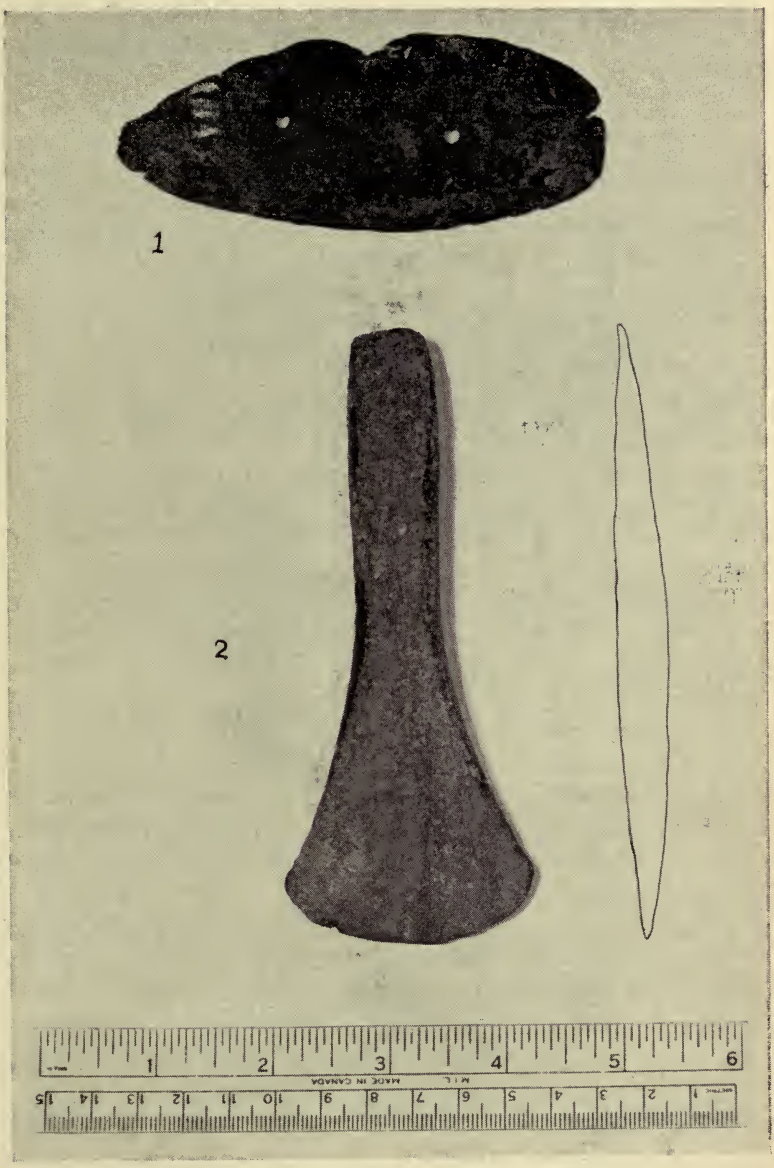


PLATE V. ISOLATED FINDS

1. Gorget, flat with edges pounded and ground. Ovoid in shape with one end rather pointed. Two circular perforations countersunk from the same surface (shown in illustration), one slightly above

and one slightly below the long axis of the object. This surface was worn toward the body; the outer surface is considerably more smooth and polished. Imperfections in the material cause breaks on edges.

Length: 4 - 5/16" Width at centre: 1⅞"
Distance between perforations: 1½" (centre to centre)
Diameter of perforations: 3/16" and ⅛"
Weight: 2 oz. ⅛

2. Spatulate-shape celt. Rectangular in transverse section at centre of tool, expanding sharply to excurvate bit. Grooves on the two broad surfaces taper to thin edge at base of tool. There is also a slight narrowing at base. Surfaces are smooth. Considerable green patination.

Length: 5 - 7/16" Depth, at centre: ½"
Width, at centre: 11/16" Grooves, length: 2½"
at bit: 2⅛" width: ½"
at base: ⅝"

36, R U). A celt of similar shape was found by Wright on the Donaldson Site (Wright 1963. Plate XXV). They are less angular and more ovate at the bit than Wittry's Group VI, C. A small adze from the red ochre burial probably had a straight cutting edge; the original shape has been altered by erosion, however.

The celt with medial V-shape notch resembles one found by Ritchie at the Picton Site in Eastern Ontario. The cutting edge, however, is more excurvate. The notch is more open (Ritchie, 1949. Plate II).

One heavy, deeply grained celt corresponds to Wittry's Group VI, D. A slightly curved celt, longer and narrower than the Lambeth find, is in the Royal Ontario Museum and was found near Fort William, north of Lake Superior. The spatulate-shape adze is similar in outline to one of Wittry's Group VIII, K.

The circular and rectangular awls from the Bruce burial and the square awls from the red ochre burial are similar to awls illustrated in the literature of the Old Copper Culture. Two short awls, one with square base. one with blunt base, resemble awls illustrated by Quimby (1960, Fig. 37, M, N) as Hopewell tools, but which also occur in Old Copper.

In the absence of associated material it is impossible to identify the makers or the users of the copper. We may assume that from a very early period there was continual movement both northward and southward along the shore of Lake Huron and on the main waterways of the Southern Ontario penin-

sula (Lee, 1959. pp. 89-90). It is apparent that a Woodland people of relatively long time span resided in the area, who, possibly through ancestral, probably through trade affiliations, shared in a copper tradition with tribes to the west with whom this was a somewhat stronger trait. The remote basis of the tradition, as represented in this collection, may have been the Old Copper Culture, but the impression is that later influences were introduced from more than one, and indeed, from widely separated centers.

Of a different history is the copper recovered in the area that borders the southern shores of Georgian Bay. On July 8th, 1957, a rather spectacular find occurred during the excavation of a prehistoric Huron site, the Forget Site, by the Summer School of Indian Archaeology of the Western Ontario University. A copper cache of five socketed projectile points, a rat-tail tanged spear point, two bifacial cutting tools, and two awls were discovered near a line of palisade post molds which traversed an extensive refuse dump (Plate VII, Nos. 2-11). Seventeen inches from the surface, bright green began to show through the blackened sandy soil. This being an unusual development on a Huron dig, all other activities ceased, and the greatest care was taken in noting the provenience of the cache and in the removal of the objects.

The refuse dump extended along a cut in the hillside caused by a spring. It had been examined for a distance of twenty to twenty-five feet on a thirty foot face, and since 1957 has continued to yield prolific finds for an additional twenty feet. The soil was blackened sand, interspersed with deposits of gray and white ash, and carbon to a varying depth of 24 to 48 inches. In the 5-foot square where the copper appeared, were the usual organic remains, pot sherds, pipe stems, and a gaming stone, to a depth of 30 inches.

The copper lay in close proximity, blades pointing north, as though at one time bound by a thong that had disintegrated. There was a slight infiltration of sand between the objects. At the same level, between the tanged knife which had fallen to one side and the blades, was a specimen of Huron pottery.

These were undoubtedly highly prized tools, deposited at the base of a palisade pole for safekeeping, for it is beyond

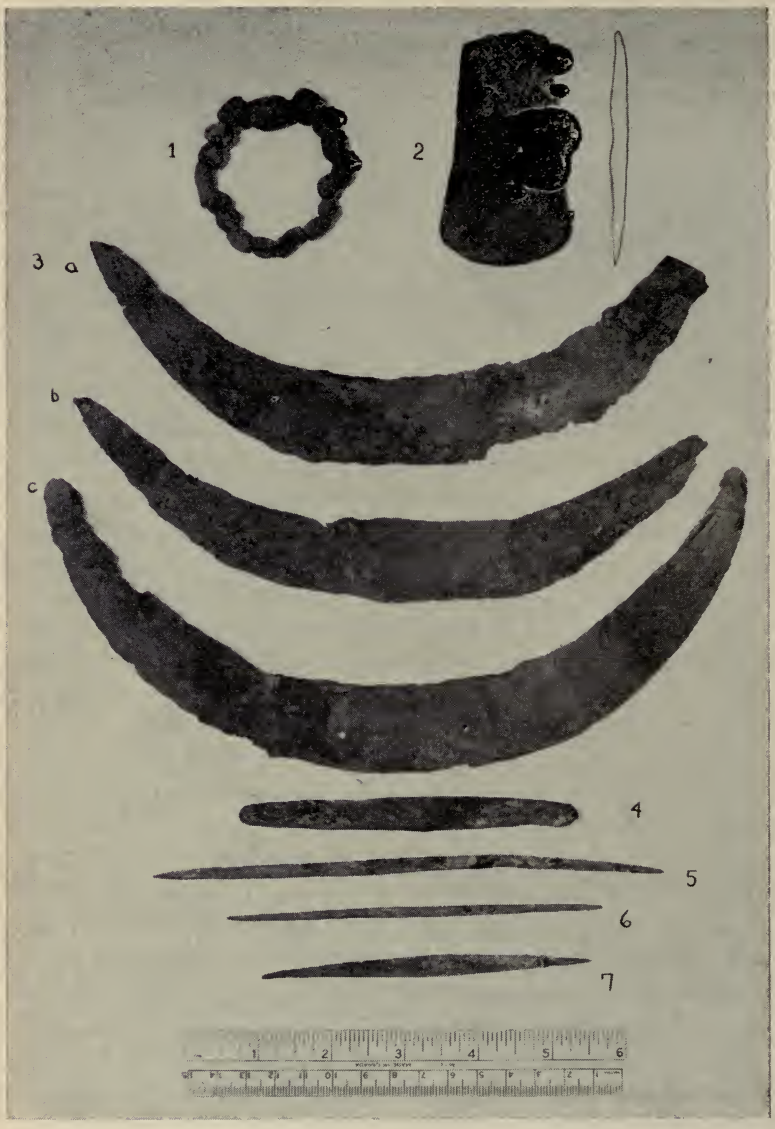


PLATE VI. BRUCE COUNTY BURIAL

1. Beads, seventeen, made by rolling thin strips of copper. Generally spheroidal in shape. Point of fusion is barely discernible in some cases.

Lengths: ⅝" to 5/16"

2. Celt, rectangular in transverse section expanding to excurvate bit. Rough and mottled green on one surface; opposite surface is bright green with erosion toward poll.
   Length: 3½" Width, at centre: 1-7/16"
   Depth at centre: 3/16" at bit: 1-13/16"
   at poll: 1½"
3. Crescents, cut from very thin sheet copper. Green patination.
   a. One point is broken, or cut, straight; the opposite point is diagonal. Edges eroded in places.
   Distance between points: 7¾" Width at centre: 1-5/16"
   b. Irregularly cut edges, points eroded.
   Distance between points: 8½" Width at centre: 1¼"
   c. Two circular perforations have been countersunk in the approximate centre. Points are ovate in shape. The material is wavy and there is considerable erosion toward one point.
   Distance between points: 8⅝" Width, at centre: 1¼"
   at points: ¼" & 5/16"
   Distance between perforations: 1¾" (centre to centre)
   Diameter of perforations: ⅛"
4. Unidentified tool, rectangular in cross section, tapering in width to ovate ends. Rough surfaces, with some erosion; green in color.
   Length: 4-11/16" Width at centre: 7/16" Depth at centre: ¼"
5. Awl, circular, tapering to sharp points. Battered 1¾" (or eroded), below which it is bent slightly 1-7/8". Rough surface, green.
   Length: 7" Diameter: ¼"
6. Awl, circular, tapering to sharp points. Rough surfaces, considerable patina.
   Length: 5-3/16" Diameter: 3/16"
7. Awl, rectangular in section, tapering to sharp needle-like points. One end appears to have been hafted but this may be the result of erosion. Rough surfaces, green.
   Length: 4-9/16" Width at centre: ¼" Thickness at centre: ⅛"

consideration that these valuable possessions would be tossed, even by accident, into the village refuse pit.

Similar tanged spear points and a leaf-shaped socketed point are illustrated by Quimby with tools of the Old Copper Culture (Quimby, 1960. Fig. 24, 25). The Forget spear point, however, has straight edges and a hooked tang, and the leaf-shaped point has a closed round socket.

Four socketed points have been fashioned in the same general pattern. They seem similar in shape to points from Manitoba, illustrated by Griffin (1961, Plate XXVIII). Edges are straight, sockets are open, angular in section, and convex or pointed at base. Two are well proportioned with pebbled surfaces and are light in weight. Two are heavy, with deep ridging and considerable erosion. One weak shoulder suggests knives as illustrated by Griffin (1961, Plate XXXI, 8, 9), although this, in part, may be caused by erosion on the edges.

The two bifacial cutting tools resemble flint knives but have not been found in the literature dealing with copper artifacts. They may be a variant of Wittry's Group I, K (Plate VII, Nos. 8, 9).

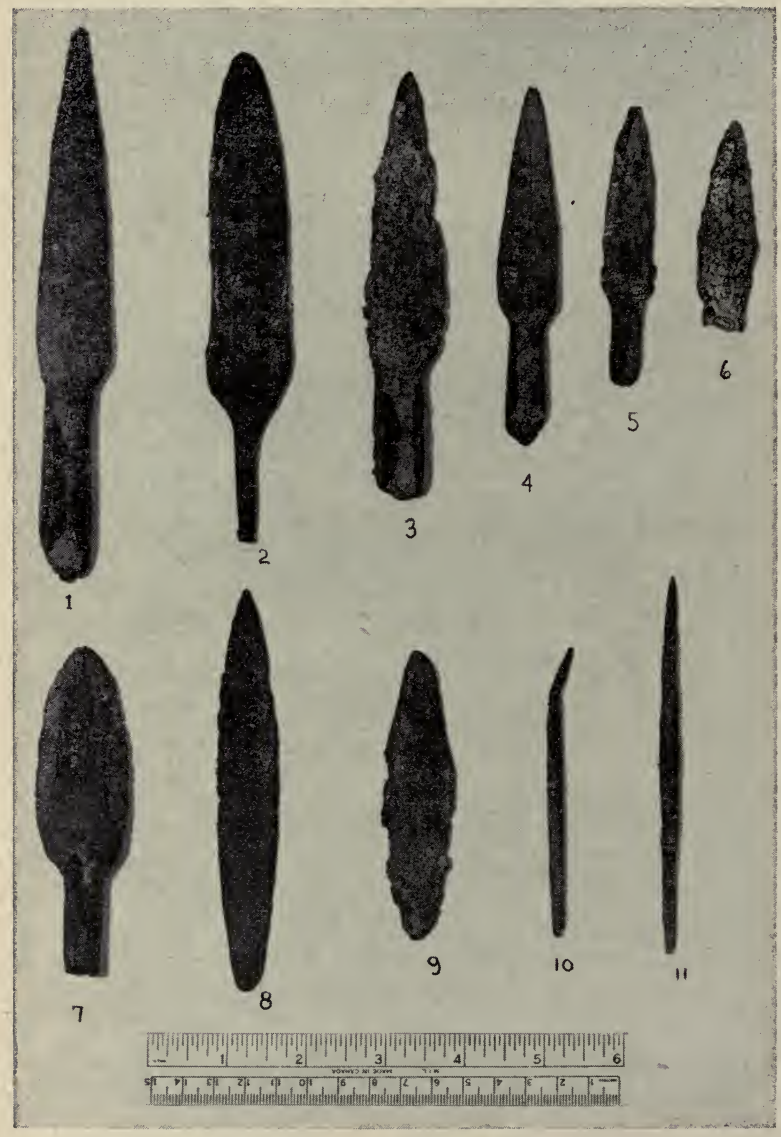


PLATE VII. FORGET SITE—WYEBRIDGE

1. Projectile point, socketed. Blade is flat on under surface; median ridge on upper surface; one weak shoulder. Socket is angular, open, with pointed base. Edges are dull and tip is blunt. This is an extremely fine specimen of workmanship. Smooth surfaces with longitudinal ridges on under surface.
   Blade, length: 4⅞"
   width at base: 1"
   thickness at centre: ¼"
   Socket, length: 2⅝"
   width: ⅝"
   opening:
   at base of blade: 5/16"
   at base of socket: ¼"
   Weight: 4 oz.

2. Spear point, rat-tail tang; median ridges, not quite centred. Parallel edges, very sharp, battered on either edge, 1⅛", commencing ¾" and 1¼" from base of blade. Tang has small hook at tip. Smooth surface with faint mottling of green.
   Blade, length: 5½"
   width at base: 1-1/16"
   depth at centre: 3/16"
   Tang, length: 1⅝"
   width at base of blade: 5/16"
   Hook, depth: ⅛"

3. Projectile point, socketed. Under surface of blade is flat; upper surface slightly convex; socket is angular and open. The base of the socket is irregular from erosion but has probably been convex. One weak shoulder gives the appearance of a knife. Tool is roughly made, or, possibly incompleted or badly eroded. Deep longitudinal ridging on surfaces.
   Blade, length: 4⅛"
   width at base: 1"
   thickness at centre: 3/16"
   Socket, length: 1⅝"
   width: 11/16"
   opening: ⅜"

4. Projectile point, socketed. Under surface of blade is flat, median ridge on upper surface extended to base of socket. Tip is broken. Socket is angular, open, and pointed at base. Light in weight, pebbled surfaces. Similar in material and shape to No. 5.
   Blade, length: 3¼"
   width at base: ¾"
   Socket, length: 1⅝"
   width: 7/16" - 9/16"
   opening: ⅜"

5. Projectile point, socketed. Under surface is flat; median ridge on upper surface. Edges of socket are eroded or broken. Base of socket is convex. Upper surface of tool is pebbled; under surface has deep longitudinal ridging, otherwise it is similar in shape and material to No. 4.
   Blade, length: 2⅝"
   width at base: 11/16"
   thickness at centre: ⅛"
   Socket, length: 1"
   width: ⅜"

6. Projectile point. Socket has been broken at base of blade. One weak shoulder, possibly the result of battering or erosion. Flat under surface, upper surface slightly convex. Deep longitudinal ridging on both surfaces. Green.
   Blade, length: 2½"
   width at centre: ¾"
   width at base: ⅝"
   thickness at centre: 3/16"
   Socket, width: ½"

7. Projectile point, socketed. Lanceolate in shape with round, closed socket. Blade is flat, thinning to sharp edges. There is a longitudinal break in the socket due to imperfections in the material.
   Blade, length: 3"
   greatest width: 1-3/16"
   thickness at centre: ⅛"
   Socket, length: 1¼"
   diameter: 7/16"

8. Cutting tool, ellipsoidal in shape, with oval base. Flat surfaces thinning to sharp cutting edges. There is no indication that this tool was hafted. Deep ridges in metal and some erosion.
Length: 5¼" Thickness at centre: ⅛" Width at centre: 13/16"

9. Cutting tool, ellipsoidal in shape with oval base. Flat surfaces thinning to edges that are considerably eroded; no indication of hafting. Deep ridges in material. Green.
Length: 3¾" Width at centre: 1" Thickness at centre: 3/16"

10. Awl, roughly circular, tapering to sharp ends. At one tip metal did not fuse. ⅛
Length: 5" Diameter: ¼"

11. Awl, roughly circular, tapering to either end, one of which is bent at ⅝".
Length: 3 - 13/16" Diameter: 3/16"

Shortly after the cache find, a copper disc was discovered between the inner and outer line of palisade post molds in the north-west corner of the site. The only cord-marked pottery found on the Forget Site was on the same level at a distance of five feet. The disc is very thin, and perforated; and appears similar to discs found at the McCollum Site in the Nipigon District of Ontario (Griffin, 1961. Plate XIX).

The following summer a fifth socketed blade was discovered in the refuse dump, about 6 feet from the cache find, and at a depth of 14 inches from the sod level. This is a heavy tool (4 oz. avoir.) similar in pattern to the cache knives — flat under surface, median ridge on upper surface, angular open in workmanship and material. It suggests, in fact, a ceremonial piece, the edges and point being quite blunt (Plate VII, No. 1).

We continue to find copper on the Forget Site. One rolled tubular bead, and five small pieces of irregularly cut native copper have occurred in refuse dumps; a bead, a stemmed arrowpoint, a conical shaped object, 10 small awls, or pins, and small pieces of sheet copper of various shapes have been recovered from pits within the wall-lines of longhouses (Plate VIII, Nos. 2-8). The fill of the pits was blackened sand intermixed with midden refuse; in one case the fill was a concentration of white and gray ash. One copper bead was found in a firepit. In no case was the copper loged at the edge or at the base of a pit.

Probably the most interesting longhouse discovery was four trianguloid strips of sheet copper in a pit that also yield-

ed small potsherds, bone fragments, and two small stones. The strips were tightly compressed. They were jaggedly cut and could have been in preparation for the rolling of beads of different lengths (Plate VIII, No. 1).

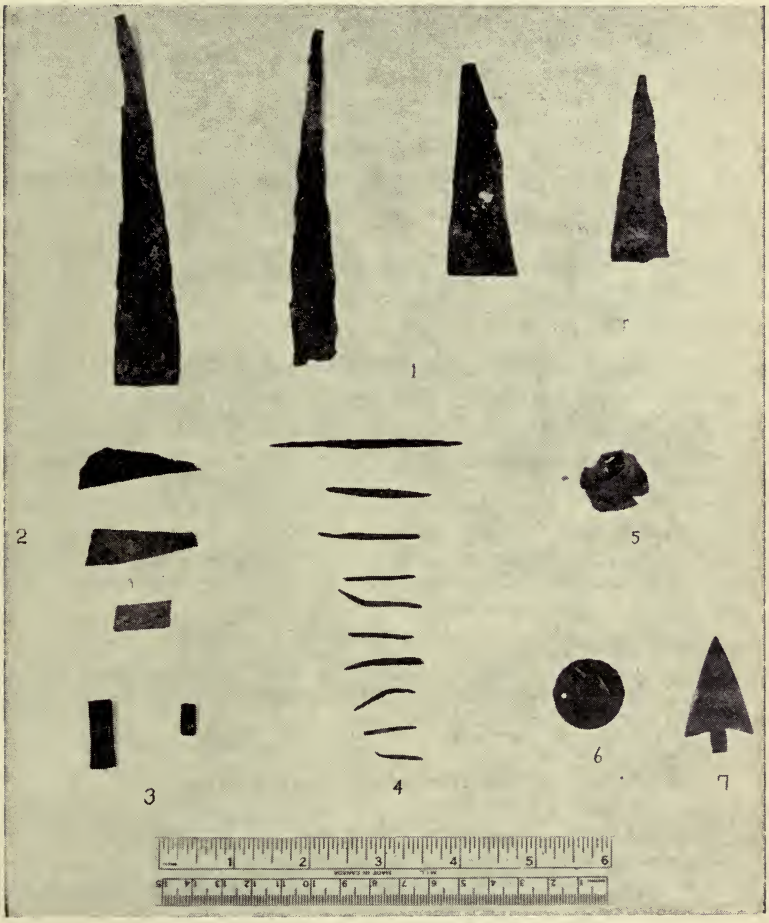


PLATE VIII. FORGET SITE—WYEBRIDGE.

1. Copper strips, four, jagged, trianguloid in shape. Pattern of patination is the result of tight binding.

Length:	**5⅛"**	**4 - 11/16"**	**2 - 15/16"**	**2⅝"**
Width:	**⅞" to 3/16"**	**9/16" to ⅛"**	**⅞" to 3/16**	**13/16 to ⅛"**

2. Three strips, of irregular size and shape cut from thin sheet copper.

3. Beads, two, tubular. Smaller bead is smooth and polished.
Lengths: 15/16" 7/16"

4. Ten small awls or pins.

(a) Circular, one point sharp, opposite point flattened. Rough surface.
Length: 2 - 9/16" Diameter: ⅛"

(b) Plano-convex, lesion in under surface. One sharp point, one blunt. Smooth polished surface.
Length: 1⅞" Width: ⅛"

(c) Two, circular, straight, with one sharp point and square or broken base. Rough surfaces.
Lengths: 1" ⅞"" Diameters: 1/16" 1/16"

(d) One roughly circular, straight, one end blunt, one end square or broken.
Length: 1⅛" Diameter: ⅛"

(e) Five circular, bent, with one sharp point, and opposite end square, blunt, or broken. One is open in centre.
Lengths: 1⅛" 1 - 1/16" ⅞" 11/16" ⅝"
Diameters: ⅛" — 1/16"

5. A cone-shaped object, fashioned by folding a thin strip of sheet copper. The upper edge is bent outward, and the base of the cone is open. A first impression is that this could have been the lining of a pipe bowl. The open base, however, and the absence of burning makes this conjectural. Two perforations were made prior to folding, as one of them is overlapped by the outer fold.
Depth: 13/16" Diameter of mouth, outer edge: 15/16 inches
Diameter of base opening: ¼" Diameter of perforations: ⅛"

6. Disc, circular, extremely thin with edges cut and ground. A single perforation occurs ⅛" from edge. One face bears cuts of a sharp instrument. Faint mottling.
Diameter: 1" Diameter of perforation: 1/16"

7. Projectile point, stemmed, extremely thin. Triangular in shape with rabbit ears. Both surfaces are irregular from pounding. Edges are cut and ground.
Blade, length: 1½" Stem, length: 5/16"
with at base: 15/16" 3/16"

The presence of the smaller, partially worked specimens within the dwellings proves that the people living on the Forget Site were not only in possession of copper, but that they were engaged in fashioning it. What the relationship may be between these rather slight pieces and the expertly manufacturd tools of ancient pattern found in the refuse dump is not so easily resolved.

In recent excavations on Isle Royale and from a survey of several archaeological collections from the island by the Na-

tional Park Service and the Museum of Anthropology, at the University of Michigan, there were found to be "some very specific relationships to the Iroquois pottery of Southern Ontario". [1]

Decorated body sherds have been discovered on Isle Royale that are similar to late prehistoric and historic Huron types, although without the fully developed collars and castellations of the later Huron pottery (Quimby, 1939. Plate II; Griffin, 1961, p. 11). A few specimens of Iroquois Linear, and Middleport Oblique patterns, both of which occur with some frequency on the Forget Site, have been identified in the Isle Royale Collections. [1]

The Huron Indians were extensive travelers and traders advancing far to the north and west to Lake Superior (Hunt, 1940. p. 55). [2] Influences of their northern Algonkian neighbours are not unfrequently reflected on Huron sites. The temporal origin of the Forget tools may be difficult to assess, but it is logical to assume that they came to the Forget Site as a result of the relationship of the inhabitants, or their ancestors, with tribes to the northwest.

[1] Correspondence with Mr. Tyler Bastian, the Museum of Anthropology, the University of Michigan, Ann Arbor, Michigan, December 22, 1963.

[2] A copper celt found some years ago in an ossuary in the town of Midland is illustrated in the Ontario Archaeological Report, 1912, p. 50.

Western Ontario

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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

An Introduction to Prehistoric Archeology, by Frank Hole and Robert F. Heizer. New York: Holt, Rinehart and Winston, 1965. 316 pages, illustrations. $7.00.

Though we have indicated that the BOOKSHELF is primarily concerned with presenting detailed evaluations of studies pertaining to our region, this book is also one appropriate to our interests. Its title is somewhat misleading since it deals with the methods of prehistoric archaeology rather than with the substantive content of the field. As a general account of how the archaeologist goes about his work in field and laboratory and in the preparation of his reports, it is the type of study that should be in the hands of every member

of the Wisconsin Archeological Society and in particular those who are interested in participating in field work.

The book is divided into four parts, the first of which uses a brief history of archaeology to illustrate the diversity of the field and describes the various kinds of prehistoric sites that may be found and indicates how they were formed. An important chapter in this section discusses the topic of context, suggesting it is composed of three elements: space, time, and culture. All sites have geographical context (context in space) and the sites or the artifacts in them often can be dated (context in time). For archaeology, cultural context consists of repeated associations of artifacts in time and space and often, using such techniques as stratigraphy, it is possible to establish that a particular assemblage of artifacts is not a mechanical mixture of specimens but rather the remains left by a particular population. Hole and Heizer stress that it is the knowledge of context which determines the extent to which one can make interpretations about a body of specimens. Part two of the book deals with how the facts of prehistory are acquired. Chapters in this section deal with the site survey, excavation and recording, classification and description, and technical analyses. Part three is concerned with the various techniques of dating the events of prehistory and part four with describing and interpreting prehistoric remains.

Considering the broad scope of the book, each of these sections is necessarily quite concise and terse. Yet for each topic citations are given to more extended treatments so that more than nine hundred references in the bibliography make the book of value to the advanced student as well as to the beginner. One may read the book with profit as a fascinating introduction to archaeological methods and procedures and the illustrative detail will be found to add considerable interest to the narrative. Despite its concise and compact treatment, it may be viewed as an essential reference book and guide to archaeological literature on methodology.

One can hardly read this book without being impressed anew with what a complex undertaking archaeological research is, if it is to be conducted properly and important bits

of information essential for full interpretation are not to be irretrievably lost. This is not to make the point that only professional archaeologists should be engaged in archaeological research. Obviously, sound professional training should equip a person to do many of the operations required for thorough archaelogical research but it can not equip even him to do all of the essential tasks. Archaeological research today requires the cooperation of specialists trained in a variety of scientific disciplines and no single person can possibly master all of the techniques that may be involved. Given this situation, amateur and professional alike need to mobilize when site excavation or site salvage is involved. In more general discussions of aspects such context will serve to reinforce the position argued many times in the pages of **The** Wisconsin Archeologist, that clear and accurate numbering of specimens in a collection and the maintenance of a permanent catalog in which the location and circumstances of a find is recorded is of critical importance. Without such a record a specimen is simply a curio — perhaps not without interest but certainly of limited value for archaeological research. In brief, the book speaks to all of us as members of a society dedicated to promoting archaeology and will serve to remind us that we constantly need to learn more as to how this should be accomplished.

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